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**THREE ESSAYS ON “DOING CARE”, GENDER DIFFERENCES IN THE
WORK DAY, AND WOMEN’S CARE WORK IN THE HOUSEHOLD**

A Dissertation Presented

by

AVANTI MUKHERJEE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

September 2017

Department of Economics

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ABSTRACT

THREE ESSAYS ON “DOING CARE”, GENDER DIFFERENCES IN THE WORK DAY, AND WOMEN’S CARE WORK IN THE HOUSEHOLD

SEPTEMBER 2017

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This dissertation provides a theoretical perspective on why women’s responsibility for care work lengthens their workday relative to men due to subsistence requirements, and draws attention to the relevance of other female family members. Building from theories of institutional bargaining research insights from “doing gender”, I develop a theoretical perspective on “doing care” that considers both bargaining power and social norms as determinants of differences in time allocation across and within gender. Conventional bargaining models predict that women who earn incomes can substitute hours of paid work for unpaid work. Using qualitative field work from India, and my theory of “doing care”, I argue, that women have limited ability to trade income-earning work for care work by persuading their husbands to do more. The immediacy of family needs and strong cultural obligations compel women to devote time to care work. This is particularly evident among the Adivasi (a low income social group with less binding gender norms than other groups), especially their ability to do less care work. Older women are also able to reduce care work with the presence of younger women, especially daughters-in-laws. In households without a co-resident daughter-in-law, the presence of older daughters lightens mother’s hours of direct and indirect care more than the presence of older sons. In this regard, I build on the work of Barcellos, Carvalho and Muney (2014), which examines whether sons receive more childcare than daughters, by considering how “doing care” complicates the occurrence of son preference in practice. As daughters may provide their mothers with more assistance with care work than sons, mothers’ in particular may not be as swayed by son preference in the allocation of time to care. Results from multivariate regression using information of married couples’ as well as of mothers’ without co-resident daughters-in-law from the Indian Time Use Survey 1998-99 confirms my hypotheses. My results indicates that research on women’s care work in South Asia as well as on parents’ differential treatment of boys and girls in terms of care-giving needs to consider the reliance of women on daughters-in-law and daughters respectively.

Keywords: Gender, Care, Intra-household Allocation of time, Son Preference

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CHAPTER 1

“DOING CARE” - INTRA-HOUSEHOLD DIFFERENCES IN TIME SPENT ON WORK AND CARE IN RURAL INDIA

Introduction

The gender division of labor within households is typically unequal with women shouldering a bulk of care work and working longer hours than men. At the same time, there are differences among women in a household depending on their age, and relationship to household head, as well as the number and gender of children. The increased availability of time use data offers the scope to examine such intra-household inequalities in the allocation of time use. Research using such data has largely been descriptive, measuring the patterns and trends in gender differences in time spent on paid and unpaid work, especially on unpaid care. Time use research that investigates women's substitutability of care work for income-earning work, or just women's ability to reduce care work per se is pertinent to understand unequal intra-household allocation of time; but such research is sparse and largely focused on developed areas such as the US, Australia and Europe.

In this paper, I critically examine the theoretical and empirical literature on the intra-household allocation of time to motivate a set of hypotheses on gender differences in total work hours and women's time spent on care work that can be tested with time-use data. In the next section, I offer a critical review of the theoretical literature on gender inequality within households. The previously held assumption that households make joint decisions based on efficiency considerations has been displaced by two very different approaches. At one extreme, household bargaining models focus on the lack of access to market earnings, (which hinder women's fallback position) with little reference to social

norms. At the other extreme, sociological theories of “doing gender” focus entirely on normative pressures related to gender with little attention to others factors. Time-use data offer one way to empirically examine these approaches and measure the extent to which women can reduce their care and total work hours. However, it also raises a number of conceptual and methodological issues. I explore these issues in the third section, where I also summarize descriptive results that are relevant to theories of household time allocation, and illustrate the scope to explore the intra-household allocation of time, with particular attention to women's household chores and child care. In the fourth section, I make the case for a theoretical perspective based on “doing care”, which considers both bargaining power and social norms as determinants of gender differences in time allocation. Next, I describe ways in which this perspective can be illustrated via mixed methods approach combining time-use data from rural India and qualitative data: (1) the cultural assignment of women to care work in the South Asian context limits women's ability to trade income-earning work for care work by persuading their husbands to do more; (2) Older women have the power to delegate care work to younger women, daughters-in-law; and (3), in households without a co-resident daughter-in-law, the presence of older daughters lightens mother's hours of direct and indirect care more than the presence of older sons. The extent to which women can reduce their total and care work hours given their income-earning hours and the presence of other family members are tested in the next two dissertation essays.

Unequal intra-household allocation

Household allocation of labor time and resources tends to be unequal with women devoting time to paid work in addition to care work (Charmes 2015). There is also

evidence that they receive lower shares of expenditures on nutrition, health care and education than men (Kaur 2008, Alderman and Gertler 1997, Lise and Seitz 2011, Pitt, Rosenzweig and Hassan 1990). Whereas some theories of intra-household allocation explain such outcomes in terms of joint utility maximization, others emphasize bargaining over gains from cooperation, and yet others, the role of norms and other institutions in household bargaining.

Unitary household models

Unitary models assume that households behave as a single entity, pooling incomes, labor and other resources, intent on maximizing household earnings and/or production. Unequal outcomes such as the distribution of food within households are the result of achieving efficiency. For instance, if men earn higher wages or perform more physically strenuous work such as ploughing a field, then in times of scarcity women allocate more food to men to ensure they get the requisite calories to perform the physical labor necessary to expand household production or earnings (Pitt, Rosenzweig and Hassan 1990, Alderman et al 1995). Another example is Becker's model. Household interests are assumed to be homogenized by an altruistic (male) household head who allocates labor time and resources to maximize household incomes and goods produced in the household. All other household members, women and children, are self interested, and therefore cooperate with the household head in allocation of time to care work and other work to maximize what would constitute their share of the household surplus (Becker 1981).

While efficiency can explain specialization, it does not explain why women work longer hours overall. The assumption of household income pooling, or of male

altruism/female self-interestedness also runs counter to the empirical evidence that households do not necessarily pool incomes, or that men are more likely to be spending on their own consumption such as tobacco and alcohol and women on health care and education of children (Alderman et al 1995, Haddad, Hoddinott and Alderman 1997). It is also not convincing that women 'voluntarily' give up food, education and leisure when they are typically not in a position to demand their fair share (Folbre 1986).

Household bargaining models

Bargaining models assume heterogeneous preferences and explicitly theorize conflict within households to explain inequality in intra-household outcomes. If there are gains to be reaped from cooperation over labor time and sharing resources within households, there are also potential conflicts over how these gains should be divided such as who does household chores and who gets to enjoy more leisure. Conflicts are resolved in favor of those members who have the strongest fallback i.e. the alternative set of outcomes if cooperation fails. In so-called “collective models”, households make efficient decisions, but weight the preferences of their members differently in ways that reflect relative bargaining power (Chiappori 1992, 1997). In the divorce threat model, the spouse who has a lower fallback has more to lose from divorce will perform more household labor to access material support (Manser and Brown 1980, McElroy and Horney 1981). In the separate spheres model, the fallback is when each spouse retreats to their respective spheres of household production and market production (earning an income) and do not make voluntary contributions to shared goods. In this case, there is no exit from marriage, but the spouse without access to earnings has more to lose from non-cooperation (Lundberg and Pollak 1993).

These bargaining models that emphasize the role of paid work participation and/or wage rates are similar to sociological theories of relative resources and dependency. By the relative resources perspective, the spouse with relatively higher education and/or earnings has more "power" than the other in avoiding domestic chores such as cooking, cleaning etc (Bianchi et al 2000). The dependency theory suggests that the spouse that is more dependent on the other spouse for economic support will provide household labor in return for the support (Brines 1994). In all these theories, each spouse is advocating for their own interests, which is to do less work while getting more out of cooperation. The gender of the spouse does not matter, only the fallback position or degree of dependency or access to resources.

Problematising “rationality”

Sen's cooperative-conflict model illustrates how preferences, or interests, are not exogenous. Eschewing optimizing techniques, he argues that perceived interests and perceived contributions also influence the bargaining process in addition to fallback positions. Women will bargain for their interests to the extent they perceive their own self-interests as distinct from others' in the household, and perceive their own unpaid contributions as valuable to the household. At the same time, if their husbands' or other household members take women's contributions for granted, women's bargaining power is bound to be weaker (Sen 1990). In other words, there is an implicit argument that women's gender identity affects their perception and hence whether they bargain for their own interests. In this respect, Sen anticipates the economics of identity arguments put forward by Akerlof and Kranton; individual's perceptions of costs and benefits are affected by a sense of deviation from one's ascribed identity (Akerlof and Kranton 2000).

Both Sen and Akerlof and Kranton argue that preferences are dependent on people's gender, race or other axes of identity, but do not have a theory on how preferences are shaped by identity.

Norms, “doing gender” and institutional bargaining

The social construction of gender as an identity has been theorized as some degree of conscious adoption of traits, rules and expectations related to one's sex rather than an automatic internalization of norms. By "doing gender", West and Zimmerman present an argument where gender is the product of "social doings" and not just a set of traits, and roles (1987:129). Gender is an ongoing activity in everyday interactions, where individuals are accountable to others in their interactions and in their social milieus for presenting as female/feminine and male/masculine (West and Zimmerman 1987, 2009). Thus, an individual who is biologically female could earn more than her husband but still feels accountable in her social context for being 'unfeminine', and therefore may compensate by increasing their time spent on housework and child care (Bittman et al 2003)

West and Zimmerman focus on norms and not enough on other institutional factors, and their broad focus on norms of gender pays insufficient attention to how norm and rules related to care-giving per se affect the performance of gender. Norms and other institutional factors influence bargaining power, and in turn institutional factors including norms and bargaining are relevant to understanding intra-household inequality (McElroy 1990, 1992; Folbre 1994). Indeed, there is evidence that both bargaining and “doing gender” shape the allocation of spouses' time to household chores (Bittman et al 2003). Norms and rules that favor men itself may be bargained over through women's active

advocacy in elder/caste councils or resistance within households (Agarwal 1997, Kandiyoti 1988). On the other hand, women can also engage in covert acts of resistance and/or strike “patriarchal bargains” where they strategize to maximize their security by reinforcing gender norms over younger women such as daughters-in-law (Kandiyoti 1988, Kaur 2008). While such institutional and individual processes are consistent with West and Zimmerman's ideas of “doing” and “redoing” gender in everyday practices and interactions, institutional bargaining is distinct by explicitly considering women's agency in advocating for their self-interest within given institutional constraints.

Several social institutions such as informal customs, formal rules, laws, and access to resources influence the asymmetrical bargaining power by gender (McElroy 1990, 1992; Folbre 1994). For instance, individual bargaining power gained from having land or property tend to be more relevant in rural, developing country contexts (Katz 1991, Agarwal 1997). Marital contracts, inheritance rules, or taxation systems can either weaken or strengthen women's bargaining power by shaping their access to resources, and reinforcing certain roles and obligations (McElroy 1990, 1992, Kabeer 1999, Braunstein and Folbre 2001).

These examples also help to illustrate how institutions shape bargaining power both at the individual and group levels, and in particular how the assignment of child care to women puts them in a weaker position as a gender (Folbre 1994, Bagett and Folbre 1999). The absence of land rights limits the bargaining power of specific groups of people such as landless laborers and/or women, not just the individual bargaining power of persons who do not own or have access to land. Rules and laws governing marriage and inheritance systems also define rights given to each gender, assigns responsibilities,

or in some cases allows men to evade certain responsibilities. For instance, while marital contracts in Anglo-American law have traditionally given husbands explicit rights of control over their wives' bodies, property, products of labor including minor children, husband's support of their wives and children were neither clearly defined, nor was a wife's claim on her husband's wealth and earnings enforceable (Braunstein and Folbre 2001). Even as feminist advocacy have modified legal inequalities, the provision of child support and/or alimony has been difficult to enforce (Hunter 1983). In general, the cultural assignment of childcare to women flows from a complex of institutional factors and results in weaker bargaining power for women, as they have to devote time and resources caring for children.

Time use studies on women and men's work days

Diary-based time-use data collected from nationally representative surveys provide invaluable insights into the intra-household allocation of labor time to various categories of work. Effective utilization of this data requires attention to a number of important definitional, conceptual and methodological issues. Patterns and trends of time-use in developed and developing countries illustrate the continuity of care and household work as women's work as well as the distinct nature of such work in rural, developing country contexts. Whereas research that test hypotheses using time-use data from developed countries find evidence for both bargaining and “doing gender” approaches, other studies from developing countries strongly indicate that it may be difficult for women to persuade their husbands to do more care work and that the division of care and household work is between women and their daughters-in-law and daughters.

Commonly used definitions of work

Reid's third party criterion defines work as any activity that can be potentially delegated to a third person for pay, or otherwise (Reid 1934). The principle of potential delegation of in Reid's criterion is close to Ironmongers definition of work as any activity that yields transferable benefits (Folbre and Yoon 2008)

Researchers studying gender differences in work in developing countries tend to use categories of work in relation to the system of national accounts (SNA) because the SNA provides global guidelines on the definition of work and includes subsistence and informal work. The SNA, however, has historically relied on a distinction of whether activities produce goods and services for sale, or not (Anker 1983, Beneria 1999 Mukherjee 2009). The most current production boundary limits 'economic activities' to production and processing of goods and services performed for incomes, production of goods for own consumption and the maintenance, and/or construction of own dwellings (Mukherjee, forthcoming). SNA work thus includes all types of agricultural and allied production, regardless of whether it is for the market or home consumption, including subsistence tasks such as fetching water. Yet, it arbitrarily excludes services such as cooking, cleaning and direct care for own household members (Anker 1983, Charmes 2006, Mukherjee 2009, Budlender 2008, Hirway 2010). Researchers studying time allocation from a feminist perspective use the categories of SNA and extended SNA work, where extended SNA includes services for own consumption i.e. tasks such as household maintenance, cooking, the direct care of children and so on.¹ While SNA and

¹ Within the set of all activities that constitute work by the third party criterion, the partition between SNA and extended SNA work is not the same as those between market and non-market work, or paid and unpaid work. Charmes (2006) has a useful three-way classification table that shows how SNA work includes both

extended SNA work are consistent with the third party criterion at the level of definition, there are underlying conceptual differences.

Conceptual issues: Does care constitute “work”, or “caring labor”?

The conceptual underpinning of Reid’s third party criterion is one of potential delegation or transferability of benefits. The SNA conceptualization of work is in terms of activities for pay, and/or production for the market, which is based on conventional theories of labor supply that are rooted in subjective motivations. Work is undertaken for pay that provides sufficient utility to balance the disutility of foregoing leisure, and leisure is undertaken for its intrinsic pleasure. Work associated with production for the home and family is not included in pay-based or disutility-based definition of work, and may be lumped in with leisure. In contrast, Reid's third party criterion would unambiguously treat activities related to care as work.

Nevertheless, Reid's criterion has been criticized on the grounds that it has a market bias with the potential to undervalue care (Himmelweit 1995, Wood 2007). Care has been used to refer to both caring activities as well as caring motivations such as concern for others, and altruism (Folbre and Nelson 2000). For instance, there is the concept of "caring labor", which refers to caring provided face-to-face, and intrinsic motivations shaped by an emotional attachment, or connection between caregiver and care-recipient. This is different from activities driven by extrinsic motivations such as pay rates (Badgett and Folbre 1999). Such intrinsic motivations are important to assure a certain quality of care and hence for the well being of dependents. Critiques of a market-centered understanding and definitions of care, especially with respect to policy-making,

market and non-market, and also paid and unpaid work. Extended SNA work are all unpaid and non-marketed housework and direct care (See Figure 3.1, pg 43)

emerge from concerns that extrinsic motivations for pay, or other utilitarian considerations would either crowd out intrinsic caring motivations, and in turn the quality of care provided (Himmelweit 1995; Folbre and Nelson 2000). However, intrinsic motivations and emotional attachment also develop in the context of paid care work such as care providers for children, elderly and other types of dependents, nurses, and teachers (Himmelweit 1999, England 2005). While this is similar to “emotional labor” or the management of feelings and emotions to create a certain type of bodily and affective display such as by air hostesses, waitresses, and retail workers, not all emotional labor is caring labor because of the transitory nature between service providers and clients (Hoschild 1983, Himmelweit 1999).

While the conceptual priority given to caring labor is relevant to reveal the quality of care and the undervaluation paid care in markets, it deflects attention from the nature and quantity of indirect forms of care that women in developing countries engage in to provide the basic necessities of water, fuel and food for their families. Even when affective relationships form a significant motivation for why women engage in physically onerous types of care such as carrying heavy loads of firewood for miles, such tasks would be experienced as work (Mukherjee 2009). Indeed, the same person can subjectively experience childcare as work and as non-work depending on activity, time of day and context, even in western, industrialized countries (Folbre and Yoon 2008).² This makes motivations a difficult metric to use when the aim of research is to explain differences in time spent on work by women and men, and among different groups of women.

² Spending time with a happy, calm child has intrinsic pleasure but taking care of a sick, cranky, child at 2 am in the morning would be tiresome and may be experienced as work (Folbre 2010)

Methods to measure work and care

The diary method is widely considered the best survey instrument to measure time use and is widely used (outside of Latin America).³ Research on time use for more than forty years show that the diary method tends to have greater validity and reliability compared to stylized questions (Bittman and Wajcman 2000, Budlender 2010). Time diaries are a 24-hour record of respondent's activities; where the record is typically a description of activities undertaken, the time spent on these activities, including start time and end time in some cases, during specified time intervals. Whereas the Indian Time Use Survey 1998-99 uses 1-hour intervals, several European countries use 10-minute intervals in their time use survey (Mukherjee, forthcoming)

Nevertheless, time diaries by design are focused on activities in chronological order rather than on responsibilities, which can underestimate simultaneous activities including supervisory care. Supervisory care, i.e. being close to infants, young children and other dependents to provide hands-on care and nurturance when required, can be combined with work, or leisure and/or personal care time (including sleep). If someone has to be available to care for young infants 24 hours in a day, then the upper limit of supervisory care can be as high as 24 hours for young infants (Connelly and Kimmel 2010). Unless time use diaries are explicitly designed to capture simultaneity, especially supervisory care with probing questions such as “what else did you do”, or “were you responsible for a child in this period”, supervisory care tends to be underestimated in survey. Indeed, in a review of published results and survey methodologies of over 40

³Latin American Surveys typically use activity logs where respondents are asked how much time they spent on a given activities in the previous week, and typically the list of activities contain 100 plus categories.

countries in another paper, I show that the time spent on childcare and other direct care is very low for all women except where diary instruments are designed to rigorously measure the simultaneity and/or responsibility for children. At the same time, time use diaries do capture hands-on care provided to children (Mukherjee, forthcoming). This is also true of the Indian Time Use Survey 1998-99 (see Technical Appendix, C5)

Descriptive time use research

The broad gendered patterns of time use common to both developed and developing countries show that women spend more hours in care-giving than men in a given day or week; such gender differences are particularly pronounced when women and men are parents of young children. In a survey of 59 countries' time use data, Charmes finds that in most countries women's total hours of work (unpaid and paid work) are higher than that of men because women devote more time to the care of dependents and household chores on average compared to men (Charmes 2015). The disparities are the least with near parity in Northern and Western Europe, especially in Netherlands and the nordic countries (Charmes 2015, Burda, Hammemesh and Weil 2013). Trends of paid and unpaid work show that unpaid care work in particular is “sticky” with women remaining responsible for care work even as they are employed in greater numbers. For instance, cross-country trends for 20 countries spanning 1965 to 2003 show that married, employed fathers' time to unpaid work has increased from little less than 20 to 37 percent indicating women still do most of the unpaid work (Hook 2006). Evidence from several other cross-country and individual country studies suggests that men's hours in unpaid care work has not increased as much as women's hours of paid work in most countries so that the gaps in total work hours persist (Burda, Hammemesh and Weil 2013, Budlender

2008, Charmes 2015, Aguiar and Hurst 2009, Gimenez-Nadal and Sevilla 2014, Medeiros, Osorio and Costa 2007).

Descriptive research also illustrates the distinct nature of unpaid work in developing countries. Women in several developing countries have to compensate for the lack of public infrastructure and household amenities by spending substantial lengths of time on physically onerous tasks such as fetching water, firewood, and fodder in addition to cooking, cleaning and direct care of children (Blackden and Wodon 2006). Even the content of paid work tends to be diverse with both women and men relying on cultivation for the market, and wage work in both agricultural and non-agricultural sectors (Budlender 2008, Hirway 2010).

Time use data and hypotheses on intra-household allocation of time

Research that analyzes the causes of patterns and trends in women's work is still nascent. Time-use research that examines hypotheses on the intra-household allocation of work hours is largely in the context of Australia, the US and European countries, and mostly on the gender differences between spouses. Several sociologists measure the impact of couples' relative earnings on time spent in unpaid household chores to test for bargaining and “doing gender” find evidence for both (Greenstein 1996, 2000, Newman 2002, Bittman et al 2003, Schneider 2011, Baxter and Hewitt 2013, Bertrand, Kamenica and Pan 2015). As wives' contribution to household income goes from zero to half, they spend less time on household chores suggesting some bargaining effects at work. Yet, once women are the main breadwinners, they devote more time to household chores and their husbands who spend less time compared to other husbands. These results have been

interpreted as engaging in "gender display" or "neutralizing deviance" from the male-breadwinner-female-dependent norm (Brines 1994, Greenstein 2000, Bittman et al 2003).

Another relevant factor (especially in affluent countries) is the potential for outsourcing household chores. Gupta (2007) and Gupta and Ash (2008) argue that absolute rather than relative earning matters because they affect women's ability to purchase market substitutes for the services they might otherwise provide.

Cross-national differences illustrate the influence of distinct institutional environments on how women and men respond to shifts in relative earnings. For instance, while bargaining effects were evident in both Australian data from 1992 and U.S data from 1985 and 1987 i.e. women reduced time to housework as they earned more relative to their husbands, it is only the Australian data that showed an increase in women's housework once they earned more than their husband. Australian men seem impervious to changes in relative earnings, while U.S men decrease their housework slightly with lower relative earnings. The male breadwinner norm appeared to be more predominant in Australia, so that couples with female breadwinners may be perceived as more "deviant" than in the US (Bittman et al, 2003: 206-10, Baxter and Hewitt 2013: 47-48).

Women's time spent on childcare has been relatively more stable over the decades compared to time spent on household chores. For instance, during 1965 – 2005, time spent on childcare has remained relatively stable for all women in the US even after accounting for demographic changes (Aguiar and Hurst 2009, Bianchi 2000). However, time to household chores declined for both employed and non-employed mothers (Bianchi and Robinson 1997). Parents may consider time devoted to children more of a luxury good: the income elasticity of time spent on child care is large and positive while

the income elasticity of time spent on home production is large and negative in the United States (Kimmel and Connelly 2007, Guryan, Hurst, and Kearney 2008).

In short, considerable evidence points to important interactions among social norms, conventional measures of bargaining power (market income, hours of paid work), and types of care work. At the same time, more attention has been given to married mothers and fathers and empirical research examining the role of co-resident women is relatively scarce.

Historical studies of the United States describe the important contributions that daughters made towards alleviating their mothers' workloads. In the early twentieth century, older daughters in immigrant working-class families tended to their younger siblings while their mothers did contracted piece work or other types of income-earning work (Nasaw 1985 in Bianchi 2000). The following decades witnessed increases in schooling and female labor force participation as well as declining co-residence of older children. Such trends were associated with a reduced supply of potential unpaid caregivers such as older daughters by the turn of the 21st century (Short, Goldscheider and Torr 2006). Indeed, data from the 1980s and 1990s shows that the reliance of mothers on relative care went down (Brewster and Padavic 2002, Abrams and Goldscheider 2002). Older studies situated in developing countries also illustrate mothers' reliance on substitute caregivers, including daughters and grandmothers (Ho 1979, Chaudhury 1982, Engle 1989, Desai and Jain 1994, Tiefenthaler 1997).

Ethnographic work from India and other parts of South Asia suggest that older women can wield considerable power over daughters-in-law, with implications for intra-household allocation of time among women. Mothers-in-law can often dictate their

daughter's-in-law access to health care and nutrition, their reproductive choices and time spent on household work and unpaid work on family businesses (Kaur 2008, Pande and Ashton 2007, Simkhada, Porter and Teijlingen 2010). However, mothers-in-law typically wield power over their daughters-in-law as wives of the household head. When older women join the households of their sons i.e. are mothers of the household head, daughters-in-law have more room to exercise agency (Gallin 1994, Vera-Sanso 1999). Nevertheless, mothers-in-law are known to contribute to husbands abusing their wives (Fernandez 1997). In South Asia, the perceived under-performance of care work such as food not being prepared the right way is a commonly cited cause for violence (Rani and Bonu 2008). Such intra-gender relations among women strongly indicate that theories of intra-household allocation of time should consider the role of daughters and daughters-in-law in women's strategies to reduce their unpaid work, especially unpaid care work.

“Doing care”

The insights of research on “doing gender” can be extended to a more specific analysis of “doing care”, which explains the interplay between social norms and relative bargaining power between women and men, as well as among women. By “doing care”, I refer to the obligations placed on women to provide care; obligations that are constructed both by the nature of care work and cultural norms. In this sense “doing care” is distinct from performing care work per se. Similarly, while hours of care work per se are central to outline my theory, it is different from “doing care.”

While my theory of "doing care" derives from “doing gender”, I highlight the urgency of meeting subsistence care needs. “Doing gender” implies that women perform expected gender roles via dress, affect, the performance of care work etc., to be

accountable as women (West and Zimmerman 1987). “Doing care” implies that women have to meet pressing subsistence needs of children and other dependents besides performing expected gender roles. “Doing care” also goes beyond “doing gender” by building on theories of institutional bargaining. Specifically, I propose a broader view of bargaining power with a focus on norms and practices, which assign care work to women, and make it difficult for women as a gender to resist such cultural obligations.

This theoretical perspective requires careful specification of the meaning of “care work”. Following other time use researchers and feminist economists, I use Reid's third party criterion to define work, and care as meeting the physiological needs of household members such as food, water, sanitation, shelter as well as emotional nurturance. I treat 'care work', as a sub-category of work that corresponds with unpaid care given to family members. I attach the term "work" to "care" i.e. "care work" to convey that care is work insofar as the objective aspects of caring can be delegated to a third person; and that caregiving can also involve physically demanding manual labor requiring significant time and efforts. Income earning work is all other work. That is, care work and income-earning work are mutually exclusive and exhaustive categories of work (see Table C1, Technical appendix). Income earning can come under the rubric of care because one of the goals for earning an income is to provide care (Folbre and Yoon 2008). However, there is a distinction between income-earning work and care work because not all caring can be replaced by market purchased substitutes, and not all caring can be performed without any market purchased inputs. More, paid care work is a category I do not include in my

analysis as the reliance on paid child care and domestic chores tends to be negligible in rural India.⁴

Within care work, there is a distinction between direct care and indirect care. Direct care entails hands on physical care and emotional nurturance provided to other household members especially dependents. Typically, direct care is largely composed of childcare, especially supervisory care, as it is more common to have young children as dependents than the sick, elderly and the disabled. Indirect care is composed of those unpaid tasks that indirectly support physiological wellbeing such as cooking, cleaning, and fetching drinking water. In rural areas, indirect care also includes SNA activities such as fetching drinking water, carrying loads of fuel wood and animal fodder, making "dung cakes" (fuel for earthen stoves), kitchen gardening, foraging for berries, fruits etc; tasks that are vital to preparing meals and supplementing meals.

The distinctions between income-earning and care work, and between indirect and childcare are also substantive with respect to intra-household allocation of time. Income-earning work is associated with more fungibility and could offer bargaining power unlike care work. Within care work, the nature of both indirect and child care are such that they are not always compatible especially when women have to perform manual labor such as carrying heavy loads of firewood or fodder. Such incompatibility either necessitates the

4 The National Sample Survey on employment and unemployment reports share of workers by industrial codes, including those who work for households as "domestic personnel" which includes "housemaid", "cook", "gardener", "gatekeeper/watchman", "governess/babysitter" (i.e. nanny), "tutor", "driver" and "others". Together these formed about 0.8% of all rural Indian women employed, and 8.3% of all urban Indian women employed in 2011-12. (NSSO 2014: 166-69) Ostensibly it is for such reasons that the ITUS also does not include an explicit activity code for paid care work. Coding at the most disaggregated level has "petty services" which lumps together "domestic servants", "sweepers", "washers" with "barbers", "cobblers", "prostitution", "guarding and watching for wages".

need for substitute caregivers for young children and/or shapes incentives to delegate burdensome forms of care to other women in the household.

I propose a theory of bargaining power that accounts for a number of factors besides access to income that influence the intra-household allocation of time, especially to care work. I defined collective bargaining power as the ability of specific groups of people to influence norms, rules, practices, and the distribution of assets including those relevant to time spent on work.⁵ Collective bargaining power flows from collective identities (including gender) that demarcate women (or other genders) of different generations, marital status, relationship to family head, parental status class, caste, and so on (Folbre 1994). Women as a gender are culturally assigned to care work, which reduces their bargaining power. However, women from a given collective identity (class, caste, relationship to household head, parental and marital status, and so on) could reduce their care work hours depending on their access to assets, rules governing marriage, and norms specific to collective identities.

In the specific context of rural South Asia, norms, rules and practices create a social consensus that care work is women's work; a consensus that weakens women's collective bargaining power to persuade their husbands to assist them. Men are typically held responsible for subsistence requirements via agricultural work and other income earning activities that are not culturally viewed as care work. Despite cultural

5 My idea of collective bargaining power is distinct from Agarwal's extra-household bargaining power. Agarwal develops the concept of "extra-household bargaining power", which individual women have in their community and other spaces outside the household to explicitly challenge existing practices, distribution of endowments etc. that go against their interests. My idea of collective bargaining is more organic, diffuse, and referring to the decentralized ways in which specific kind of women find themselves constrained or empowered. In this sense, it has more to do with women's position as a gender intersected with other characteristics than it has to do with their explicit bargaining power as individuals or defined groups (such as being part of a women's association).

heterogeneity, all social groups, tend to view women as subordinate to their husbands/male relatives, particularly in their roles as wives and daughters-in-laws performing care work. In most social groups, such subordination is reinforced by rules such as weak rights to property, to divorce and entitlements available on divorce; practices such as arranged marriage and early age of marriage; and cultural sanctions such as the threat of domestic violence and sexual violence for any deviations from expected femininity (Agarwal 1994, IIPS 2007, Jhejheebhoy et al 2013).⁶ The onus on women to “do care” is also reinforced by sanctions against parents of daughters as well as by older women who have a stake in the status quo. Parents arrange their daughters' marriages at an early age to avoid non-marital pregnancy that would entail social shame for the family.

Norms also construct identities by the intersection of gender and relationship to household head such as “wife”, “son”, “daughter-in-law”, “daughter”; identities that are ordered in an hierarchy that empowers some women more than others in delegating care work. Wives and daughters-in-laws rather than married and unmarried daughters of household heads are viewed as being responsible to provide care. Nevertheless, even among women who are married into the family, the more senior women delegate to junior women where seniority is based both on their relationship to the head and age of their husband (Agarwal 1997, Kaur 2008). Wives of households heads can delegate care work

6 By the National Family Health Survey (NHFS), 2005-06 shows that 46% of all women aged 18-29 got married before the legal age of 18. Also, one in three women sampled report having been slapped by a husband and one in seven reported physical injuries as a result of spousal violence at some point. 54% of all women and 51% of all men sampled agreed that husbands are justified in beating a wife in some circumstances. Among women, 35% agreed that neglect of house and children merited being beaten by husband (IIPS 2007). In another study, women aged 15-24 whose marriages were arranged by families were more likely to experience violence than those who chose their own spouses or had semi-arranged marriages (Jhejheebhoy et al 2013)

to their daughters-in-law, and among daughters-in-law, those who are married to older sons have relatively more power and agency compared to those married to younger sons. Mothers-in-law and daughters-in-law, or sisters-in-law married to brothers are thus often pitted against one another in the allocation of labor, property and other resources. Conflicts tend to favor older women who typically have stronger rights when they are married to the household head.

Given how norms and rules shape the collective bargaining power of people depending on their gender, marital status, age, and relationship to household head, the implications for intra-household allocation of time would be as given below. While time use data per se does not allow us to test alternative explanations based on a collective model, or norm-based model or income-based bargaining model, it does allow us to measure to the extent to which women can trade hours of care work with income-earning hours, as well as how their hours of work varies by the presence of other women in the family.

One, the trade-off between income-earning and care work for women will be limited. In turn, income-earning work would lengthen women's total work day. This is because women who earn incomes are not able to persuade their husbands to do more care work.

Two, older women who have daughters-in-law present in their household will be able to lower their care work. Women with daughters-in-law living with them are likely to to reduce their care work, and total work hours by delegating to their daughters-in-law in particular. Daughters-in-law are likely to be more important than daughters over women's' life cycle because sons continue the family line and it is their wives (i.e.

daughter-in-law) who remain in the households, rather than daughters who go to live in the households they are married into.

Third, mothers without co-resident daughters-in-law and other adult female relatives would rely on daughters more than sons. That is, the presence of older daughters rather than older sons enable women to reduce their hours of care work, especially indirect care.

Finally, the nature and type of care work also matters for the extent to which it can be delegated to other women in the household. Given the relative elasticity of indirect care compared to childcare, indirect care is more likely to be delegated to daughters-in-law and daughters. Indirect care such as cooking and fetching water, firewood and fodder are critical in the sense that they have to be done to ensure everyone including the caregiver has food and water. Yet, such tasks as well as others such as washing dishes and cleaning house are onerous and likely to be delegated to household members with less power such as daughters-in-law or young daughters. When there are young children present in the household, it is more likely that tasks such as bathing, washing and supervisory care would be transferred from the mother to a substitute caregiver instead of, say breastfeeding infants.

The hypotheses outlined above are examined using the Indian Time Use Survey 1998-99 as well as qualitative data gathered from Central India in the next two chapters. Econometric methods allow me to measure the extent to which women can reduce their total and care work hours via income-earning hours or delegation to other family members controlling for other factors. Vignettes and patterns from interviews conducted in Central India allows me to juxtapose the substitutability between women's care work

and income-earning hours against norms, beliefs and practices that shape care-giving, gender relations as well as relations among women. In this respect, the mixed method approach I deploy in my next chapter is useful to illustrate the role of norms and bargaining, especially because I cannot test whether substitutability is attributable to a collective model, or a divorce threat model or norm-based model or lack of collective bargaining. At the same time, the use of econometric methods allows me to confirm that substitutability is limited, and presence of daughters-in-law is what allows women reduce their time to care work. The third chapter uses econometric methods to examine which types of care work (direct child care, indirect care) mothers reduce when older children are present in addition to younger ones, and whether it is older daughters rather than older sons that make a difference to mothers without co-resident daughters-in-law.

Conclusion

In this paper, I develop a theory of “doing care” that combines insights from the literatures on institutional bargaining and “doing gender” to explain why women are more likely to rely on daughters-in-law and daughters than on husbands to reduce their care work, and hence their total work hours. Studies that test bargaining and “doing gender” hypotheses using American and Australian data find evidence for both. At the same time, dated village studies from developing countries as well as historical studies from the US illustrate the reliance of women on substitute care-givers especially daughters. While “doing gender” explains why women do more unpaid care work even when they are engaged in paid work in terms of cultural accountability, such accountability does not explain why women delegate care work to their daughters over sons, or to other female relatives. I build on theories of institutional bargaining to develop

a concept of collective bargaining power that outlines how norms and practices shape a social consensus of care as women's work, and make it difficult for women as a gender to resist the cultural obligations to provide care. More, even as all women are compelled to provide care, older women married to household heads can reduce time spent on hands-on childcare and on indirect care by delegating to daughters-in-law and daughters.

While my arguments are similar to those made by Kandiyoti (1988) and Agarwal (1997) in problematizing the self-abnegation of women assumed by Sen (1990), I make two distinct contributions. First, I explain how bargaining power derived from norms and rules of care giving explain intra-household allocation of time in particular. Second, I outline how norms and rules shape the collective bargaining power of women as a gender, which is not only weaker with respect to men (all else equal), but also under cut by intra-gender conflicts between mothers-in-law and daughters-in-law, as well as between sisters-in-law.

Having developed a theoretical perspective on “doing care” and then examined intra-household allocation of care work within households in the rest of my dissertation, I argue there is the scope to elaborate on “doing care” further with multi-level analysis. The influence of bargaining, norms and collective decisions could be discerned by linking a detailed institutional level analysis of prevailing laws, norms and rules in a given context (say Central India) with analysis of time use data and qualitative data on differences in preferences within households. Analysis of qualitative data such as the extent to which women's preferences are taken into account in household decisions; how norms influence different women's ability to resist care-giving, the types of care-giving they can resist and who they are likely to delegate care work to; and what the possibilities

for collective action on socializing care are could help to test “doing care” in terms of bargaining, norms, individual and collective decision-making. Such research, would help to outline in greater detail the ways in which the socialization of care has the potential to aid the empowerment of women as well as weaken one of the links in the chain that divide women from one another.

CHAPTER 2

GENDER DIFFERENCES IN THE WORK DAY IN RURAL INDIA

Introduction

Women typically work longer days than men (UNDP 1995, World Bank 2012). Following Feminists Economists, I define work as any activity that can be potentially delegated to a third person.⁷ This definition of work encompasses paid and unpaid activities, and includes subsistence tasks, fetching water, cooking, and direct care of children and other dependents. Typically, men spend most of their workday on paid work, and women remain responsible for a bulk of unpaid work combining this with any paid work they do (Budlender 2010, Antonopolous and Hirway 2010, Razavi and Staab 2012). In western, industrialized countries, one debate over such gender differences concerns the relative importance of bargaining power versus "doing gender". While paid work gives women economic independence to reduce unpaid work, they may still keep up unpaid work to remain accountably "feminine" (Brines 1994, Bittman, England, et al 2003). In South Asia, however, the terms of this debate differ in important respects -- divorce is uncommon limiting the threat of exit, and fulfilling care responsibilities is not just a normative or performative act of "doing gender" but also a subsistence requirement. Poor women face particularly intense pressure to prioritize family needs while earning incomes (Akintola 2008, Blackden and Wodon 2006, Floro and Pichetpogsa 2010). While increased availability of time use data has deepened the scope to examine possible household bargaining effects of paid work, such research is relatively sparse in developing country contexts.

7 Margaret Reid first suggested this definition in the *Economics of Household Production* (1934).

In this paper, I explain why rural Indian women work longer hours than men. Given the strong cultural obligations on married women to perform unpaid care, and the pressing need to fetch water and cook food, there is limited substitutability between such tasks and earning incomes in a low-wage economy. As a result increases in women's paid hours do not reduce unpaid care hours by much and results in a net increase in their total work hours. Although husbands face pressures to meet household needs via agricultural and wage work, these are not viewed as care and they are not culturally obliged to perform care work. Like some studies that test “doing gender” and bargaining power, mine suggests that husbands "do gender" by not helping with care. However, controlling for other factors, I also show that wives' total work hours are increased by their paid hours, reduced when a daughter-in-law lives with them and that both the responsiveness of care work to children and hours of paid work varies with cultural norms shaped by group membership.

In what follows, I outline how care work constitutes distinct tasks in rural, developing country contexts, and offer a critique of conventional bargaining models that have limited inapplicability to the South Asian context. My theory of "doing care" is informed both by theories of institutional bargaining and by qualitative interviews gathered in rural Central India. I document the nature of care work; normative differences between Adivasis (a low income social group with less restrictive gender norms) and other social groups; and also the limited substitution that occurs between paid and care work. Econometric analysis of data on married couples from the Indian Time Use Survey (1998-99), including a disaggregation of results by social groups confirms that “doing care” leads to limited substitutability between paid and care work. Every additional hour

of paid work in a day reduces wives' care work by 0.56 and leaves them working 0.44 hour more in total. Little compensating increase in husbands' care work hours takes place in response to their wives' additional hours of paid work. Indeed, husbands provide little care work to begin with. An increase in the number of children (aged 5 years or less) per adult in the household also increases wives' total work hours per day by 0.74. Controlling for other aspects of household composition, married women whose daughters-in-law live with them perform 1.46 fewer hours per day compared to others. Finally, cultural norms are sufficiently heterogeneous that Adivasi wives hours of care work increase only by 0.50 for every unit increase in ratio of own-children to adults compared to 0.83 for Dalit wives; also Adivasi wives reduce care work hours by 0.66 for every income earning hour, and Dalit wives by 0.54. These econometric results suggest that Adivasi wives engage in less time-intensive parenting strategies, which is consistent with my qualitative findings that they do not face the same pressures to provide intensive child care as non-Adivasi wives.

Work, Bargaining and Gender

While care work has been defined in several ways, I define it here as unpaid activities that directly meet the physical needs and emotional nurturance of family members, especially for children.⁸ Income-earning work takes the form of agricultural activities for subsistence or sale, and manufacturing and services for sale. While income-earning work indirectly meets basic needs by enabling consumption of goods and services purchased, it is distinct because those who perform it have more direct control over the product of their labor. Care work differs from income-earning work as it cannot

⁸ My first chapter provides a more detailed review of these definitions.

always be purchased, and is governed by particularly strong gender norms. My definitions of care work and income-earning work represent two mutually exclusive categories that together constitute total work.⁹

Studies from Asian, African and Latin American countries illustrate how care and income-earning work involve longer hours in developing countries especially for poor women (Blackden and Wodon 2006, Akintola 2008, Budlender 2010; Antanapolous and Hirway 2010, Razavi and Staab 2012). In rural areas, while both men and women rely on multiple activities to make ends meet, men primarily do income-earning work and women tend to combine unpaid care, unpaid work on family operated farms and agricultural wage work (Budlender 2010, Hirway 2010). Care work in rural areas typically involves onerous work such as carrying heavy loads of water, firewood and fodder necessary for meal preparation and family care (Mukherjee 2009, Hirway 2010). Rural women spend substantial lengths of time on unpaid care in areas lacking public infrastructure for provision of water, electricity, childcare and health care, and access to consumer durables such as washing machines (Mukherjee 2009, Akintola 2008). Even urban women in developing countries tend to combine paid work, and unpaid care work in ways that both lengthen work hours and increase work intensity (Floro and Pitchetpongsa 2010). Yet research on why women work longer hours than men in developing countries is sparse.

Efficiency concerns help explain time allocation. For instance, assuming women are more productive in unpaid care and men in paid employment (i.e. “intrinsically

⁹ By my definition, paid care work would come under income-earning work. The Indian Time Use survey lumps paid care (“domestic services”) with petty services so it is not possible to parse out number of hours worked or even proportion of women who report hours of paid care work. Most recent data available from the National Sample Surveys on Employment and Unemployment shows that approximately 0.8% of all women in rural India are engaged in paid domestic work (see first dissertation essay for more).

different comparative advantages"), Becker proves that the household's basket of goods and services is maximized when women specialize in home production and men in market production (Becker 1965, Becker 1985: S41). In principle, a rise in women's wages, all else equal, should lead to a reduction in their time devoted to home production. Similarly, access to drinking water, gas stoves or electricity improves productivity in unpaid care creating either an 'income effect' where time spent on unpaid care is reduced releasing time for paid employment, or a 'price effect' where time on more productive care such as elaborate meals and hands-on-activities with children is increased (Dinkelman 2011, Ilhai and Grimard 1999). However, the net effect on women's total hours worked relative to men's remains unclear.

Gender differences in total hours worked have typically been explained either by differences in bargaining power or by gender norms. In particular, the divorce threat model predicts that the spouse who has lower earnings, or fewer options outside marriage will perform more unpaid household labor in exchange for material support because he/she has more to lose from divorce (Manser and Brown 1980, McElroy and Horney 1981). Another bargaining approach suggests that independent access to market income allows women to purchase substitutes for their income (Gupta 2007). These models are not particularly appropriate for South Asia where divorce rates are extremely low, and households are quite poor.

In bargaining models that emphasize economic independence alone, neither sex nor gender plays an explicit role. However, gender identity complicates negotiations over household division of labor (Sen 1990). Actions perceived as deviations from one's identity cause enough unease to change perceptions of gains and losses and the way

bargaining power is exercised (Akerlof and Kranton 2000). Women who earn as much or more than their husbands may still work longer hours on household chores than their husbands because it aligns with their gender identity (Bittman et al 2003). The theory of "doing gender" explains such compliance: When couples do not fit typical breadwinner-dependent norms, women draw upon other types of 'sex categorization' including performance of household chores to present competency as women (West and Zimmerman 1987).¹⁰ West and Zimmerman emphasize the impact of broader normative pressures on individual identity and agency that go beyond Akerlof and Kranton's account.

Other sociologists also challenge narrow models of bargaining with evidence on the role of gender norms: earnings reduce women's time spent on domestic chores as long as they earn less than their husbands, otherwise, couples do "gender" such that women increase time on domestic chores (Brines 1994, Bittman, England et al 2003, Yu and Xie 2011, Baxter and Hewitt 2013, Bertrand, Kamenica and Pan 2015). The salience of gender norms for care work is evident in western, industrialized nations where gender gaps in total work have persisted, or even increased in Catholic countries such as Italy and Spain (Burda, Hammermesh and Weil 2013, Gimenez-Nadal and Sevilla 2014). Women's time to unpaid childcare seems invariant with paid work in some developing countries (Budlender 2008, Newman 2002).

¹⁰ By "doing gender", West and Zimmerman present an argument where gender is the product of "social doings" and not just a set of traits, and roles (1987:129). Rather than having to live up to normative conceptions of femininity or masculinity, gender is an ongoing activity in everyday interactions, where individuals are accountable to others in their interactions and beyond for presenting as female/feminine and male/masculine. Thus, an individual who is biologically female could engage in unfeminine behavior such as not doing housework but is still accountable in their social context for being unfeminine etc.

Feminist economists have called attention to the impact of social institutions on household level bargaining. For instance, laws that limit wives' control over marital property or protection from domestic violence, and norms that encourage submission to male authority, put women in a weak position to negotiate with their husbands (Folbre 1994, Agarwal 1997, Braunstein and Folbre 2001, Kabeer 2002). Indeed, rules and norms themselves can be bargained over (Agarwal 1997). An institutional approach to bargaining is consistent with West and Zimmerman's theory of "doing gender".¹¹ If gender is an accomplishment from everyday practices and interactions, then everyone is constantly "doing", and "redoing gender" (West and Zimmerman 1987, 2009). However, everyone also weighs pros and cons, including material costs, figuring out effective ways to meet their individual and collective goals (Folbre 1994). For instance, Lundberg and Pollak's (1993) separate spheres model treats social norms as the fallback such that women and men retreat to their traditional gender roles (instead of separating) when bargaining fails. Perhaps men resist care-giving responsibilities given the risk of penalties such as reduced leisure and lifetime earnings for providing care (Badgett and Folbre 1999). Such penalties also make it difficult for women to exit marriage, and may explain why separate sphere norms are sticky.

In sum, the persistence of gender norms and implications for women's agency over hours of work is under-theorized. I build on the complementarity between institutional bargaining and "doing gender" to explain why rural women work longer hours than rural men.

¹¹ Institutional bargaining is also consistent with Akerlof and Kranton. However Folbre and Agarwals approaches have fuller explanations on how pay-off structures can shift with sufficient collective agency i.e. there can be a dialectic between "gender identity" and individual actions.

"Doing Care" and Gender differences in the Work Day

By “doing care,” I refer to the social pressures and urgency to provide care, and that women's ability to resist such pressures is limited by cultural norms, rules and practices. An examination of how “doing care” limits the bargaining power derived from income-earning work requires some attention to the conceptual distinctions between care work and income-earning work.

As outlined above, care work directly meet basic needs of family members, especially children, and income-earning work is all other work, including subsistence agriculture.¹² Caregivers cannot make credible threats to neglect dependents. This is a different material position than paid employees, even unpaid family members, who often have the capacity to shirk on the job or strike for changes in the terms and processes of work. Care work also tends to be invisible, unrecognized, and devalued while income-earning work provides fungible resources, and is valued monetarily and socially. Those who spend more hours in caregiving thus have weaker bargaining power compared to those who perform more hours of income-earning work.

My perspective of “doing care” emphasizes bargaining power that flows from norms and practices on care-giving and the urgency of meeting subsistence needs besides having access and control over earnings. Such an emphasis generates several implications for the allocation of labor time between husbands and wives.

¹² While subsistence agriculture could come under care, in India produce grown on the same plot is typically divided into portions for directly meeting subsistence and also for sale. Since labor inputs are indivisible and produce is partly for sale, I treat all unpaid and paid agricultural activities as income earning work. Unpaid agricultural activities also tend to be relatively more visible and fungible compared to unpaid care. I elaborate this in greater detail in my first dissertation essay, also how my separation between care and income-earning work corresponds in some respects to that between work within the boundaries of the System of National Accounts i.e. SNA work and non-SNA work.

First, women's ability to reduce hours of care work is limited, as family needs such as water and food cannot be postponed.¹³ When it comes to providing indirect care, women could resist in covert ways such as over-spicing the curry or burning the chapattis. Nevertheless, these threats are limited as women also eat the food they prepare.

Second, women's ability to substitute care work hours with income-earning work hours is constrained by low earnings and limited control over earnings. Care work cannot be completely purchased, and yet it cannot be performed without any market purchased inputs either. Poor women in particular have strong incentives to do agricultural and/or income earning work in addition to care work to meet their families needs. Such pressures are greater if men do not do agricultural work for some reason. However, the limited options of manual wage work available to women in rural India are such that the meager wages may be insufficient to generate surpluses required to make care-burden reducing investments, or to persuade husbands to do more care work. Thus, even when women have control over incomes earned, these could be insufficient to reduce their work hours.¹⁴

Third, gender norms pit woman against one another in the division of care work. The easiest way for women to reduce their care work burden is to make other women do part of it. Older women who are married to household heads, and who have daughters-in-law living with them can delegate care work to them in their capacity as wives' of

13 Although some forms of care work can be postponed relatively more than others as I argue in my third dissertation essay, where I examine whether "doing care" entails reducing time to direct child care to carve out time for fetching water, firewood, fodder, forest produce and cooking.

14 Agarwal (1997) cites several studies on how South Asian women engage in covert forms of resistance to their families -- such as by secretly earning cash by taking small income earning jobs or selling portions of the household grain, where such acts of resistance are to earn incomes not only for subsistence but also to build "social capital" through gift giving to natal kin networks or other personal needs (1997). Yet even in such instances, surpluses may not be enough to buy the requisite infrastructure.

household head.¹⁵ Older women thus have incentives to arrange for their son's marriage at an early age, which in turn promotes early marriages for women.

Finally, both gender norms and poverty interact to influence time allocation. For instance, Adivasis, or scheduled tribes from the central belt in India, are culturally distinct from all other scheduled tribes and all other groups with implications for intra-household bargaining power. Adivasis constitute the poorest in India, located in hilly or forested enclaves with cultural practices distinct from those of caste Hindus (Alkire and Santos 2010, Shah et al 1998, Guha 2007). In particular, Adivasis place relatively fewer restrictions on women compared to other groups (Guha 2007, Ghurye 1963). Thus, while women from all social groups are assigned to “doing care”, Adivasi women may have slightly different behavioral responses to paid work.

Overall, the concept of "doing care" is more relevant to gender differences in work hours in rural India than the concept of “doing gender” applied in developed countries.

Qualitative methods and findings

My emphasis on “doing care” emerges from qualitative field research, which included semi-structured interviews and participant observation notes.

I lived in and gathered data from BN and SN; villages located in the Nimad valley of Bagli, a sub-district of the state Madhya Pradesh in India (coded to maintain privacy). My interviews were all conducted in 4 weeks between mid-August and mid-December 2011, a period covering part of the rainy and winter seasons respectively. BN was populated by ~300 households, almost wholly Adivasi with less than 10% being Sirvi

15 If older women start living with their son and wife, daughters-in-law may have greater power.

households (middle caste), Dalit (scheduled caste) and/or Muslim. SN was populated by ~150 households with roughly half being Adivasi and the other half being Sirvi. I used purposive sampling to choose 55 households, and interviewed 135 respondents (aged 13 and above) (see Appendix A1). While I branched into deeper details if respondents offered additional insights and/or were open to having longer conversation, themes I covered in all my interviews included: (a) descriptions of the previous day from time of waking to falling asleep, in chronological sequence of activities performed, estimates of time spent and whether these overlapped with being responsible for children, (b) whether respondents saw themselves as being time constrained and their ideas on alleviating such constraints, and (c) farm production and expenses incurred. I located recurring patterns of time use, and of perceptions of roles and responsibilities in my interviews and observations.

Women's workdays were longer than men's with more diverse tasks and more simultaneous tasks largely due to responsibility for care work. Among Adivasis, both women and men performed hard, manual labor, but it was women who combined care work with other work without much time to rest. Whereas women's work days were as long as 16 hours in several cases, men's were at the most 12 hours. Across all Adivasi time diaries, a woman's typical day started before the crack of dawn, continuing well past sun-down, and the demand for women's labor was constant throughout the day and the season: their tasks --- child care, cleaning out the hearth, cooking, fetching water, gathering and carrying bundles of firewood or fodder, cleaning out animal pens, mud-washing floors and walls of mud homes, or weeding in between rows of planted crops – were unrelenting. Postponement of some tasks could lead to adverse consequences. As B

(Adivasi, female, aged 59) remarked to me, "People have to eat, cattle have to be fed." In contrast, men's workdays were largely composed of agricultural and/or income-earning work alone, with ample time for leisure. The demand for men's labor peaked at specific points of the rainy season: sowing (early-mid July), tilling for a few days 3-4 times (August - October) and harvesting around mid-November.

Among the middle-caste Sirvis, the gender difference in hours worked were lower than Adivasis due to lower hours and diversity of tasks for Sirvi women compared to Adivasi women. Sirvi women typically had gas stoves and drinking water in their homes, and their work days were largely composed of care work such as preparing elaborate meals, making endless cups of teas for male relatives and visitors, and supervising children's homework, bathing and feeding. Sirvi men supervised workers, watered crops in the non-rainy seasons, and guarded mature crops overnight. Both Sirvi men and women worked a maximum of 13 hours, and men in particular had more time for social interactions.

On being asked how they managed to balance care work and income-earning work, several women explained that certain types of care work were a priority. Women with young children had to either wake up between 3.30-4:00 AM instead of 5:00-6:00 AM to fit in tasks such as cooking food; or leave for other work one to two hours later than other women. While Sirvi women from wealthier households did not have to add income-earning work to care work, those with younger children woke-up earlier to fit in their kitchen responsibilities. Adivasi women cited postponing agricultural work as well as waking up earlier as a strategy to do care work. Yet, at times the urgency of weeding or harvesting was such that women would forego not only personal care such as bathing,

but also some care work such as washing clothes or sweeping, and direct care such as ensuring children's meals. As R (Adivasi, female, 36) said, "I cook and leave food. Who has the time to feed children? Sometimes they are good and eat; sometimes dogs get to uneaten food." But even this mother, pressed for time, did not neglect the task of cooking and leaving food.

There were implicit conflicts between women and men in their perception of how women's work burden could be alleviated. Women without resources in their households, mostly Adivasi, had substantive ideas for reducing work hours: gas stoves, regular water supply, concrete/non-mud homes, and toilet facilities within their homes. Some explained this would release more time for work on their fields or for wage work. In contrast, men had not thought about these options. Both Sirvi and Adivasi men explained women's long workdays as a result of their marital obligations. Some men could not comprehend why I asked them about alleviating women's work burdens. Others, who acknowledged the utility of reducing women's time constraints, did not describe laborsaving home investments as an urgent need.

Older women perceived daughters-in-law as means to alleviating their own work burdens, their interviews replete with references to daughter-in-laws. B (Adivasi, female, 59): "Before [my] daughters-in-law came to us, it would take me all the way until 11.00 am to get all the work at home done. Now my troubles are smaller. I can go to my field on time ever since I have daughters-in-law." In contrast, H (Adivasi, female, 49): "I have to work by myself; no daughter-in-law so I am more pressured", and K (Sirvi, female, 55), "When my daughter-in-law was away, I was frantic for time."

Some daughters-in-law face the threat of violence. Among Sirvis in SN, “Daughters-in-laws are treated worse than animals... servants get more respect in some homes of this village” according to N (Sirvi, female, 37). A respondent from another household agreed with this (Sirvi, female, 24). Among Adivasis in BN, anecdotes suggest violence is accepted. During my stay in BN, an 18-year-old young woman, who was held responsible by her mother-in-law to take care of all six sisters-in-law aged 3 to 12, spoke sternly to one of them for refusing to help her with a domestic chore. She was beaten by her husband for doing so. While some respondents expressed sympathy for this woman, their disapproval for the husband focused on the public nature of his actions - “He shouldn't have hit her so much on the front yard for everyone to see.”

Adivasis and Sirvis differed in the distinct roles that wives and daughters-in-law were assigned and also in views of marital separation. Whereas Adivasi married women were frequently referred to as the “ [female] one who worked”, Sirvi married women were viewed as the “[female] one who stayed home”. Adivasis wives were involved in agricultural production decisions, and had information on expenses incurred even if it was their husbands who made the purchases. Their husbands frankly admitted to being capable of doing care work, but chose not to, explicitly citing marriage as a means to get work done. Consider this conversation between X, Y and Z, young married men aged 22, 25 and 27 respectively:

X [To me]: I used to cut vegetables, cook roti's, wash my clothes and do everything myself. But these two would come over and pester me saying, "Get married, get married, you won't have to do any of this". My parents got swayed by their words and looked for a match for me.

Y: Good came of it, no? Now you don't have to wash your clothes or cook.

[To me]: He is the only one left to take care of his old parents. His mother's eyesight was failing so he had to take care of the field, work for the organization and also do all the kitchen work.

Me: So all of you know how to cook and do these things?

Y: Yes, I can cook. Very well. I cooked and washed clothes when I was in college in Indore. I had to. But once I got married two years ago, I didn't have to anymore.

Marriage was clearly viewed by Adivasi men as a means to get care work done. Married Adivasi men in the Nimad region routinely performed care work when women were on their menstrual cycle, as it was considered 'inauspicious' for women to enter the kitchen during that time. At other times, there were clear social sanctions against men doing care work. As R (male, 38) remarked, "Any man who did women's work would be jeered as a 'wife's slave'". Another interviewee, K (female, 20) couldn't ask her 19-year-old brother-in-law to help her because, "He is not so young that I can tell him what to do".

In contrast to Adivasi wives, Sirvi wives tended not to have information on production decisions and expenses, and told me to ask their husbands about "those matters." This was true also of the few poorer Sirvi women who did hands-on work in the field when the means to hire wageworkers was limited. On being asked why women did care work or income-earning work, the wealthiest Sirvi patriarch in SN described women as being naturally ordained to be mothers, and women who had to work on the fields as the outcome of poverty. Yet, he also explained tasks such as weeding, and sowing as women's tasks given their patience, focus and "careful hands."

The contrast between Adivasi's view of married women as workers, and Sirvis' view of women's roles as caregivers, corresponded with differences in rules of separation between these groups. Among Adivasis the groom gives the bride's parents household goods and/or cash ["bride-price"] as recognition of receiving someone who works. Separation was uncommon; yet there were clear rules that a woman could initiate separation to marry another man as long as her ex-husband was repaid the original bride

price plus interest as decided by the elders' council. Among Sirvis the brides' parents give money, jewelry and other assets to the groom and his family [“dowry”] as recognition of transferring responsibility of the woman to the groom's family. Some even framed dowry as a way of giving young men fixed capital to start their new role as a family provider. Separation was viewed unfavorably, there were no rules for repaying dowry and the concerned woman's reputation was perceived as being tarnished. Such differences in options to separate and perceptions of married women's role may have implications for bargaining power over work hours, which I investigate using econometric analysis.

Quantitative methods and findings

Data from the pilot Indian Time Use Survey (ITUS) of 1998-99 provide an opportunity to compare Adivasis and other groups by testing hypotheses on gender differences in work time. The ITUS is the only publicly available survey of its kind covering multiple regions in India: Tamilnadu (South), Madhya Pradesh (Central), Gujarat (West), Orissa (East), Meghalaya (North East) and Haryana (North west).¹⁶ Conducted largely between July 1998 and June 1999, the survey collected data over the entire year to capture seasonal changes. I restrict my analysis to rural areas, which represent 70% of all households covered.¹⁷ I also limit my analysis to married couples comprised of household heads and their spouses to compare married men and women in circumstances as similar to each other as possible. For each couple, I determine a ratio of the number of their children to all adults in their household and whether they had one or

16 The National Sample Survey Organization (NSSO) that administers this survey has repeatedly said it will administer another national survey since 2012 and the survey has not happened yet. The National Statistical Commission of India, which oversees the NSSO and other statistical organizations, have also not listed a national time use survey as a priority.

17 The reason I choose rural India is because it presents a distinctly, agrarian context with greater diversity in daily activities and because Adivasis are a minority who tend to be concentrated in rural areas.

more daughters-in-law living with them. My analysis also includes a comparison of Adivasis and Dalits, groups located at the bottom of the income distribution in India but with some differences in gender norms, because this allows me to test if Adivasi behavioral responses in terms of work hours are significantly different from those of Dalits.¹⁸ While the ITUS has limited wealth variables (like many other datasets), the comparison between two low income/marginalized social groups with different gender norms reveal how cultural differences can vary the degree of substitutability between care work and income-earning work hours.

I estimate the following equation for married couples in four models where Y_j represents care work hours of wives, total work hours of wives, care work hours of husbands and total work hours of husbands:

$$Y_j = \alpha + \sum \beta_k D_{kj} + \Gamma_i X_{ij} + \Gamma_\beta X_{\beta j} + \Gamma_\gamma X_{\gamma j} + u_{\beta j} + e_j$$

The key independent variables are as follows:

D_{1j} : Own income-earning work hours,

D_{2j} : Spouses income-earning work hours,

D_{3j} : Household child-dependent ratios (ratio of couples' children aged 0-5 to all adults aged 15-75)

D_{4j} : At least one daughter-in-law lives in the household, or not

D_{5j} : Social group (Adivasi, Dalit or Others i.e. all non-Adivasi-non-Dalit persons)

The control variables are as follows:

X_{ij} : Individual controls – own age, age squared, and educational level achieved

18 The ITUS distinguishes between Adivasis (scheduled tribes), Dalits (scheduled castes) and Other (everyone else). It was not possible to separate middle caste groups (such as Sirvis) from upper caste groups in the category “Others”.

$X_{\beta j}$: Household controls – education of household head, land possessed, quality of housing

$X_{\eta j}$: Controls for season, type of day¹⁹ and geography (state fixed effects)

I test the following hypotheses for all married couples:

1. The coefficient on own income-earning hours (D_{1j}) is positive for wives' total work hours. As a corollary, the coefficient of spouses' income-earning hours (D_{2j}) is nil and insignificant for husbands' total work hours i.e. wives' income-earning hours have no influence on their husbands' care work hours.
2. The coefficient of household child dependent ratios (D_{3j}) is positive for hours of wives' care work, and total work, and is positive but significantly smaller for husbands' care and total work hours, both of which illustrate “doing care” as wives' obligations and not husbands.
3. The coefficient of having at least one daughter-in-law (D_{4j}) co-residing in the household is negative for wives' care work and total work hours. This coefficient is almost nil for their husbands.
4. The coefficient for Dalits and for Others (D_{5j}) is negative i.e. they have lower hours of care and total work than Adivasi's with larger differences among wives than husbands.

Finally, disaggregating the equation above by social group, I also predict:

¹⁹ Typically there are three seasons: *Kharif* (July-Oct); *Rabi* (Nov-Feb) and summer (Mar-June), but the survey was conducted 1998-99 with a bulk of days between July '98 to June '99. Respondents report on "previous week" in the dataset. Each of these "previous weeks" are feasible combinations of three different types of diary days --- ("normal", "weekly variant", "abnormal") --- in the five following categories: (i) all 7 are normal days- (7,0,0); (ii) all are normal and weekly variant days only - (6,1,0) (5,2,0); (iii) all are normal and abnormal days only - (6,0,1) (5,0,2); (iv) all three types of days - (0,1,6), (5,1,1) (4,1,2) (4,2,1) (3,2,2), and (v) all 7 are weekly variant days- (0,7,0) or all 7 are abnormal days- (0,0,7). The definitions of these days as well as the need to control for them are given in the description of the dataset below.

5. The slope coefficients for Adivasi wives (D1j – D4j) are significantly smaller than those of Dalits and Other wives. That is, at the margin Adivasi wives are able to make slightly higher trade-offs between income-earning work and care work, are less responsive to child dependent ratios, and rely less on daughters-in-law compared to both Dalits and Others.

An important caveat here is the issue of simultaneity – just as income-earning hours may be used to lower hours of care work, the obligations on women to do care work when they have young children places limits to the hours of wage work they can perform especially when such work is located far away from their homes. This endogeneity in income-earning hours for women in particular is such that the estimated coefficient of income-earning hours is more negative (further from 0) than the true value (closer to 0). This bias makes the coefficient higher than the true extent to which women and men reduce their total and care work hours for every income-earning hours. There are no suitable instrumental variables that can be used from the dataset to correct for this bias. However, even with the bias, the coefficient is still negative and predicts substitutability that is greater than the true value. In this sense, the model does not reject my claims and can be interpreted as measuring an upper limit to substitutability instead of the “effect” of income-earning work on care and total work respectively.

A descriptive overview of difference in hours of work between husbands and wives shows that wives work 1.5 hours longer than husbands per day (Table 1). As expected wives' longer workday than husbands' is correlated with almost exclusive responsibility for care work and performance of income-earning work on top of care work. Wives do almost all care work, with a difference of 6 hours on average per day

between wives and husbands. Yet wives also spend a third of their workday on income-earning activities unlike husbands who spend almost all of their work day (more than 90%) on such activities. As my qualitative findings suggest, married women have a more diverse workday than their husbands.

The LOWESS (locally weighted scatterplot smoothing) plot of care work and total work hours against the ratio of couples children to all adults in the household shows that child-dependent ratios increase work hours for both wives and husbands (Figure, Plots 1.1 and 1.2).²⁰ However, higher child-dependent ratios increase total work hours for women and their husbands through different channels; due to care work for women and income-earning work for their husbands. Wives with child dependent ratios of 1.5 have one hour more of care work compared to those with ratios of 0.5. Hours of all work for women are also higher by an hour in the same range of child-dependent ratios (see red lines). Husbands' hours of care work are at much lower levels, and do not change much between child- dependent ratios of 0.5 and 1.5 even though their total hours of work are far higher and increase by an hour (see blue lines).

Married women's care work and total work hours also vary by the presence of a daughter-in-law and social group (Table 2). Wives who have at least one daughter-in-law living with them perform 1.9 hours less work in total and 2.5 hours less care work compared to others. Husbands with at least one daughter-in-law living with them do an hour less of total work but this is due to 0.8 hours less of income-earning work (Panel 1, row 3). Raw social group differences indicate that Adivasis work the longest hours (both

20 Conceptually akin to moving averages, this smoothing is achieved by joining the predicted means of work time from successive regressions on household child dependent ratios (typically) on given ranges of the sample at a time. The advantage of the lowess is that it does not impose a single linear or non-linear regression line, but reveals the underlying relationship between the two variables concerned through hundreds of separate regressions lines joint together.

wives and husbands, row 4) and the differences between Adivasis and Dalits are larger than those between Dalits and Others (rows 7, 8). Care work hours do not vary much among wives, so that the difference in total hours is largely due to differences in income-earning hours. However, social group differences reflect wealth differences as well as cultural differences. Likewise, the presence of a daughter-in-law associated with lower work hours for wives may be capturing other demographic factors such as age and presence of young children. Multivariate regression results, presented later, clarify these issues.

The LOWESS plot of care and total work against income-earning work shows that care work hours are negatively correlated to income-earning hours, but not enough for a negative correlation with total work hours as well (Figure 3, Plots 2.1 and 2.2). Income-earning hours are positively correlated to all work hours. This is particularly true for wives (red lines). Comparing wives with 5 hours of income-earning work to those with 10 hours, the difference in average hours of care work is 3. The trade-off between income-earning hours and care work hours is not one-to-one; and the slope of total work hours is less than one (red line, Plot 2.1) Indeed, bivariate regression coefficients show that for a one hour increase in income-earning work is associated with 0.56 hour decline in wives care work and 0.44 hour increase in all work (Table 3). Given the bias, the true coefficient would measure a decline in care work that is even lower, and an increase in total work that is higher.

Husbands have very low average hours of care work and much of the decline in care work hours is for those who do less than 5 hours of income-earning work (blue line, Plot 2.2). Since the bulk of husbands' work is income-earning work, husbands' average

hours of all work plotted for income-earning hours approach the 45-degree line (green/solid line, Plot 2.1). A one-hour increase in husbands' income-earning work reduces care work by 0.14 and increases total work by 0.86 (Table 3).

Multivariate regressions show that the bivariate effects remain strong even after inclusion of a rich set of controls. In Table 4, columns 1-4 compares the effects of independent variables on married women's care work and total work hours, with and without controls respectively. Columns 5-8 give the effects for their husbands' care work and total work hours, with and without controls. These results suggest the relations between income-earning hour and care work hours are less likely to reflect selectivity of women with paid work.

For wives, a one hour increase in income-earning hours is associated with a decline in care work hours by 0.58 hours, and an addition of 0.42 hours to the length of the total work day (row 1, column 3-4); nearly identical to the bivariate results. A one-hour increase in wives' income-earning hours is associated with a 1 percent increase of their spouses' care work hours (row 2, column 6-7). While this could be interpreted as some increase in wives bargaining power relative to husbands, the 42 percent increase in wives total work hours confirms that income-earning work lengthens women's workday and does not change their spouse's work hours. Again, the bias means that the true increase in wives' total work hours should be higher.

The positive effect of household child-dependent ratios on married women's hours of work is three times higher than the effect on their husband's hours.²¹ A unit increase of the dependent ratio leads to a 0.75 hour increase in women's care and total work,

21 The difference in coefficients is significant using post-estimation Wald's test.

compared to a 0.25 hour increase for their husbands (Row 3, columns 3, 4, 7, 8). Presence of daughters-in-law reduces wives' total workdays by almost 1.5 hours. This is a stronger effect than that of own income-earning hours, even after controlling for own children and age. The effects are nil and insignificant for husbands once controls have been added. Thus, care work is a major factor explaining wives' longer work days even after accounting for income-earning hours, and family composition, especially the presence of daughters-in-law, is the channel via which women reduce care work hours rather than income-earning hours.

The differences in care and total work hours between Adivasis and Dalits are greater than those between Dalits and Others, without controls (row 5, and row 6 minus row 5 respectively). These differences become much smaller, even insignificant, once the best-available controls for household wealth such as land possessed and quality of housing are added. However, behavioral responses by social group do vary significantly, especially the response of total hours to income-earning hours by social groups as seen in Table 5.

Table 5 reports coefficients of regression on total work hours disaggregated by social group as well as the difference between coefficients.²² This comparison by groups allows me to measure the influence of norms on the responses of care and total work to key variables. Among wives, barring the presence of daughters-in-law, Dalit slope coefficients are closer, even identical, to Others' rather than to Adivasis. At the margin,

22 I do not report coefficients for care work hours here as these can be deduced from coefficients for total work hours. Since care work plus income-earning work is total work, once we control for own income-earning hours, the coefficients of all variables in the model of total work hours are the same as those in the model for care work hours, except for own income-earning hours). The coefficient for income-earning hours in the models for total work would be one minus the coefficient of income-earning hours from models with care work.

an hour of income-earning work adds significantly less to the total workday of Adivasis (0.34 hours) compared to Dalits and Others (0.46, 0.45), meaning Adivasi wives make slightly larger trade-offs between income-earning and care work compared to Dalit and Other wives (row 1).²³ The difference in responses to unit increase in child-dependent ratios is higher -- 0.50 hours increase in Adivasi wives' hours of work compared to 0.83 and 0.79 respectively (row 3). Both Adivasis and Dalits rely less on daughters-in-law compared to Others, and yet the differences between Adivasis and Dalits, as well as Dalits and Others are not significant (row 4).

Among husbands (including Adivasis), hours of work are not responsive to their spouse's income-earning hours (row 2). Like their wives, Adivasi husbands make higher trade-offs between income-earning work and care work compared to Dalits and others; and the difference between Adivasi and Dalit husbands is significant. Thus at the margin, Adivasi men are not doing more care work to support wives' higher income-earning hours. And yet, even as Adivasi wives face pressures to “do care,” both Adivasi wives and husbands seem to have less time-intensive parenting strategies. This is consistent with my qualitative finding that there are important cultural differences in the emphasis on care work. In particular, Adivasi women are less compelled to provide direct care such as supervising older children's eating compared to non-Adivasi wives.

An important caveat here is that the ITUS has a limited set of variables measuring wealth so I cannot fully control for wealth differences. Nevertheless, the results that Adivasi wives devote more time to income-earning activities compared to Dalits (another poor social group) suggests that there may be something culturally intrinsic to being

23 For one income-earning hour, Adivasi women reduce care work by 0.66 hour; and Dalits and Other wives by 0.54 and 0.55 hours.

Adivasi that allows women to substitute more income-earning work for care work. Similarly, Dalits' behavioral responses of care work to paid work hours are closer to all non-Adivasi-non-Dalit groups demonstrating the cultural affinity between these groups on “doing care”.

My findings that rural Indian women's income-earning hours are positively associated with their total work hours with are not entirely comparable to the studies testing bargaining power versus “doing gender” reviewed in Section 2. Most of these studies test the impact of couples' relative earnings rather than women's income earning hours, and I lack information on relative earnings. Studies that consider the effects of paid work hours find a negative effect on time devoted to household chores alone in Australian and US datasets (- 0.19 and -0.12, and -0.91 respectively), and no such substitutability in China and Taiwan (-0.02 and -0.05 respectively) (Bittman et al 2003, Baxter and Hewitt 2013, Yu and Xie 2011). However, it is not clear whether there is sufficient substitution of time to all care work with time to paid work in order to reduce hours of total work. In Spain, women's share of child-care time does not vary with their spouses' relative income (Sevilla-Sanz, Gimenez-Nadal and Fernandez 2010). While the variation in substitutability between paid work and household chores per se between US, Australia, China, and Taiwan indicate differences in bargaining and norms in these contexts. My regression results show that married women in rural India are unable to substitute income-earning work for care work to reduce total hours of work.

Conclusion

In this chapter, I offer an explanation of why married women in rural India work longer days than their husbands. By investigating whether qualitative patterns directly

observed in study villages are generalizable across a larger secondary sample from a different year, my chapter also highlights the complementary nature of qualitative and quantitative methods. In particular, participant observation and interview methods allowed me to juxtapose cultural norms, practices of separation, and gender roles with patterns of time use.

My findings demonstrate that married women in rural India who engage in income-earning activities find it difficult to significantly reduce the time they devote to family care. If husbands are unwilling to assist, wives risk compromising dependents subsistence needs. They may also fear domestic violence. Some older women are able to reduce their care work burden and hence length of workday by delegating responsibilities to daughters-in-law. Even among Adivasis – a social group with less binding gender norms compared to other groups – women's income-earning work lengthens their workdays. At the same time, Adivasi women cope with their work burdens by being less responsive to child-dependent ratios and prioritizing some forms of indirect care (meal preparation) over direct care (feeding older children).

I apply my theory of “doing care” to argue that the urgency of subsistence needs and responsibility for care in a low-wage rural economy needs to be included while examining the substitutability between income-earning and care work. Such consideration allows for a perspective on bargaining and norms that is more applicable to contexts where exit from marriage is difficult, and the presence of other women more pertinent than hours of paid work. This perspective is also relevant to assessing trade-offs between paid and unpaid work in other countries where exit from marriage is difficult. In western, developed nations, women who can afford to do so hire other women or buy

market-purchased inputs such as restaurant meals to reduce their care work hours. Poorer women may adopt less time-intensive caring strategies to make ends meet, especially in the absence of adequate social safety nets. “Doing care” could help explain why they are disempowered in the absence of supportive partners, and institutions that support care work.

CHAPTER 3

DAUGHTERS, SONS, AND MOTHERS' CARE WORK IN RURAL INDIA

Introduction

Although women are typically assigned care responsibilities, most research on time spent on childcare focuses on mothers. Less attention has been directed towards children either as recipients or providers of childcare, especially in the South Asian context. Yet, the gendering of family responsibilities tends to begin at an early age. Daughters may provide their mothers with more assistance with care work than sons. Daughters may also receive less care from their mothers than sons both as a result of cultural norms of son preference and because they are encouraged to take care of themselves.

In this paper, I test these hypotheses using the Indian Time Use Survey 1998-99 (ITUS). My analysis builds on previous research by Barcellos, Carvalho and Muney (2014), which uses the ITUS to show that households with only one infant boy spend 30 minutes more on child care on average compared to households with only one infant girl. However, my analysis differs in two important respects. First, I focus on maternal time to care instead of household care time because I want to assess how maternal care time is affected by the gender of their children. Second, I consider how differential treatment between boys and girls extends beyond receiving care to provision of care. Evidence from both developing and developed countries suggests that older children, especially daughters, help mothers with household chores and the care of their younger siblings. For this reason, I investigate both the effect of gender of young children on mother's time devoted to child care, and, given the presence of young children, the effect of gender of older children on mothers time to child care and to other household work respectively.

In the following discussion, I clarify the definition of care work, and review previous research relevant to gender and time use in rural developing country contexts. This review highlights the gaps in the study by Barcellos, Carvalho and Muney (2014), and also motivates my value-added in considering the allocation of care work to daughters over sons. Unlike Barcellos, Carvalho and Muney (2014), I also explore some factors relevant to son preference. Applying my theory of “doing care”, I argue that mothers without other female adults in the household will have relatively lower hours of child care and/or of indirect care when they have older daughters than when they have older sons. Drawing upon theories of son preference, I also argue that mothers may be less swayed by norms of son preference if they benefit from the assistance of daughters. Indeed, my results show no difference in the time spent on care between mothers who have only one son under 6 and only one daughter under 6. However, I find mothers with at least one older daughter aged 6-17 years old do 30 minutes less of indirect care work compared to mothers with no daughters and only sons aged 6-17 years. While the latter result may be due to sons aged 6-17 receiving more care than daughters aged 6-17, my results indicate that research on parents' differential treatment of boys and girls in terms of care-giving should consider how older daughters help mothers with care-giving.

Review of literature

As discussed in my first chapter, components of care work include hands-on childcare and indirect care i.e. household care, fetching water and firewood, etc.²⁴ Childcare and indirect care are not always compatible. For instance, it would be

²⁴ Care work is defined as meeting the physiological needs of household members such as food, water, sanitation, shelter as well as emotional nurturance. Childcare entails hands on physical care and emotional nurturance provided to children. It includes supervisory care, which is underestimated in the ITUS as discussed in the first dissertation essay. Indirect care is composed of those unpaid tasks that indirectly support physiological wellbeing such as cooking, cleaning, and fetching drinking water.

extremely challenging for mothers to attempt breastfeeding, or even holding children, simultaneously with physically onerous tasks such as carrying heavy bundles of fodder and firewood (Davanzo and Lee 1983, Desai and Jain 1994, Short et al 2002). As a result, mothers have to rely to some extent on substitute caregivers.

Surveys from developing countries in the 1980s and 1990s show that mothers often relied on older daughters to help provide childcare as they themselves did indirect care and/or participated in paid work (Ho 1979, Chaudhury 1982, Engle 1989, Desai and Jain 1994, Tiefenthaler 1997). While most of these studies are dated and limited to a specific village, or province, they also represent diverse methods and illustrate the importance of older female children as substitute caregivers. For instance, Desai and Jain (1994) use data on activities pursued in the previous 24 hours gathered in 1990-91 from Kanakpura, South India. Their results show that children received, on average, 3.9 hours of childcare daily from substitute caregivers even when mothers were not engaged in income-earning work.²⁵ Another study from Sylhet, Bangladesh used a 24 hour recall time diaries collected during 1979-80 to demonstrate that mothers relied far more on older female children than male children. Older female children provided three times more care than older male children if their younger siblings were not infants under 2, and/or their mothers were engaged in income-earning work (Chaudhury 1982). Analysis of information on activities in the previous week collected in 1975 from the Laguna

25 An issue with the Desai and Jain study is that they are not consistent with their measure of child care in the relevant Table i.e. Table 6 that shows average hours of childcare provided by mothers, and by substitute caregivers by the hours of market work (income-earning work) of mothers. The average hours spent by mothers is lower than that of substitute caregivers. However, whereas the hours spent by mothers is a narrower measure of time spent on activities such as feeding and bathing of children, the hours spent by substitute care-givers also includes supervisory care (watching children while simultaneously doing other activities) as well as hands-on care such as holding and playing with children. This may be due to the limitations on how the questions themselves were worded

province in the Philippines shows that number of children aged 10 and above has a negative effect on mothers' time to all care work. The effects of older siblings on mothers care work were stronger when they had younger siblings under the age of 6 (Ho 1979). Yet another study from the Philippines using similar methods collected data from the Cebu province in 1983-84 and finds that older daughters in particular spend more than twice the average time than similarly aged sons helping mothers with child care and other work (Tifenthaler 1997). Clearly both the number and gender of older siblings matters for mothers' time to child care and to other care work.

Even in the United States, recent time diary studies show that daughters do more household work than sons (Gager and Sanchez 2004). A meta-review of studies on whether American parents treated their daughters differently than sons in several different types of interactions involving both parents and children finds no clear evidence of gender differentiated treatment of children except on one count; parents encouraged gender-stereotyped housework activities for their children (Raley and Bianchi 2006, Lytton and Romney 1991 in Raley and Bianchi 2000).

The gender of children also matters for the amount of care received. Sons seem to receive more parental care time than daughters, especially from fathers. Lundberg attributes the term 'son preference' to either the desire to have sons rather than daughters, or the tendency to discriminate in favor of sons and against daughters in the allocation of resources (Lundberg 2005: 342). Since American parents seem to prefer a child of each gender, the term son preference is seldom heard in the US. Yet, evidence suggests that children's gender affects how much time and goods they receive from parents. Fathers' time investments in particular tend to be higher when they have sons (Lundberg 2005,

Hiedemann, Joesch and Rose 2004, Raley and Bianchi 2006, Mammen 2011). As Raley and Bianchi argue, mothers' are less likely to vary their time allocation by the gender of children because mothers are more involved in the hands-on care for young children, especially in activities that do not vary by gender. Fathers spend less time with children and gravitate towards sons with whom they are more likely to share interests (2006). Indeed, data from the 2003 American Time Use Survey shows that the gender of children has weak to negligible effects on mothers' time use, but fathers spend more time on their sons compared to their daughters. Sons not only received more time from fathers compared to their sisters, they also receive more time from their fathers than daughters in all-girl families received from theirs' (Mammen 2011).

Evidence on outcomes related to son preference is mixed in India. On the one hand, Indian parents appear to prefer sons to daughters; on the other hand, empirical analysis does not always confirm that girls receive fewer resources than boys. The 2011 Indian Census shows that there are 918 girls for every 1000 boys for children aged 6 or below and the deficit of girls is much larger (890-830) in several states.²⁶ These adverse juvenile sex ratios have been attributed to sex-selective abortions, female infanticide, and higher female child mortality with girls receiving less nutrition, and health care (Jha et al 2011, Kaur 2008, Vishwanathan 2000, 2004, Dasgupta et al 2002, Lundberg 2005, Sudha and Rajan 1999).²⁷ However, several empirical studies show that girls do not necessarily receive fewer resources than boys. For instance, Deaton (1997) tests whether

26 Accessed on July 17th, 2017. <https://community.data.gov.in/child-sex-ratio-0-6-years-for-statesuts-based-on-census-2011-and-goal-for-eleventh-plan-period-2011-12/>

27 Adult sex ratios are also adverse with respect to women. There are 933 women for every 1000 men in India according to the 2011 census with variance across states. At the one end, there are Haryana and Daman and Diu with 861 and 710 women for every 1000 men respectively, and at the other there is Kerala with 1058 women for every 1000 men. Data accessed from http://censusindia.gov.in/Census_Data_2001/India_at_glance/fsex.aspx on July 17th, 2017.

expenditures on goods such as alcohol and tobacco is lower for households with boys than household with girls, hypothesizing that households with boys might shift consumption from 'adult goods' to 'child goods'. He finds no significant evidence of such a shift. Further, on reviewing studies from several countries including India, Deaton concludes that there is little evidence in support of this hypothesis (Deaton 1997 in Lundberg 2005).²⁸ He does not, however, explore time allocation.

Barcellos, Carvalho and Muney (2014) are the first to examine 'son preference' in terms of time use in addition to goods and they find evidence that sons receive more time as well as other resources from household members. They also argue that the gender differential treatment of children in India could be underestimated when other differences in family characteristics due to son preference are not accounted for. If fertility choices are influenced by son preference such that parents continue having children until they have one or more sons, then daughters are more likely be in larger families (Yamaguchi 1989, Jensen 2005 in Barcellos, Carvalho and Muney 2014). In this case, daughters may receive less care because they are in larger families with fewer resources available per child rather than as a result of parental preferences. Barcellos, Carvalho and Muney argue that controlling for family size accounts for resources per child, but given the family size, the average girl may come from a family that does not necessarily prefer more sons (Barcellos, Carvalho and Muney 2014: 162). In other words, there is a selection bias. With the prevalence of practices such as sex-selective abortions and female infanticide,

28 Implicit here are gender differences in parental expenditures. There is a wealth of intra-household literature on how fathers spend more on such adult goods, and mothers more on food, health care and education for children. See for instance, Haddad, Hoddinott and Alderman (1997).

the most extreme form of son preference is that girls are simply not born, and girls that survive are more likely to be in families that do not discriminate against girls.

Barcellos, Carvalho and Muney use the empirical strategy of comparing households that have only one infant daughter to those that have only one infant son. The assumption here is that a child's sex is randomly determined at birth in the absence of sex-selective abortions, and the authors admit there is no getting around the selection bias resulting from sex-selective abortions. Limiting the sample to households with the youngest child being 1 year or less does, however, allow for an examination of those households that have not yet responded to the child's gender by having more children or capping the number of children. The sample restriction also allows to pinpoint the children receiving care – since the ITUS measures how much time respondents spend on child care and not how much care a given child receives, the youngest child is most likely to receive time spent on care by household members. Using the ITUS 1998-99, Barcellos, Muney and Carvalho find that among rural households with just one child under a year old and no other children under 6, households with just one infant boy spent roughly 60 minutes more per day on child care compared to households with just one infant girl. Using data from the Demographic and Health Survey (DHS) data from 1992, (before ultra-sound technology became widely available), the authors also show that infant boys under 15 months were likely to be breastfed longer, and receive more vitamin supplements than infant girls less than 15 months. Infant boys received at least 10 percent more of these inputs than girls (Barcellos, Carvalho and Muney 2014: 159).

If daughters are more likely to be conscripted to the care of their siblings as the literature cited above suggests, then the differential treatment of daughters and sons with

respect to care encompasses both receiving and helping with care work. Barcellos, Carvalho and Muney do not explore this issue, in part because they make an incorrect assumption regarding the ITUS. Their claim: “since, families cannot be identified, we can only identify the youngest child in the household (not in the family)” is not true (2014: 173-4) because the ITUS codes each household member by their relationship to the household head.²⁹ Further, their findings regarding care received by infant boys and girls may be inaccurate, since they arbitrarily exclude time use on some days (this is discussed further below). Therefore, it remains to be investigated whether mothers in particular spends less time on care when they have a young son compared to when they have a young daughter, as well as whether mothers' time to child care and indirect care varies by the gender of older children.

Son preference and “Doing Care”

I bring together my theoretical perspective on “doing care” with theories of son preference to argue that norms of son preference may not influence mothers as much as fathers when daughters can reduce their care work burden. Examining the relative impact of sons and daughters on maternal time use requires considering the age at which children transition from being care recipients exclusively to being potential care providers.

In the first instance, age and gender of children are relevant to whether they are more likely to receive rather than help with care. Infants who are still breastfeeding are purely recipients of childcare. The older the children get, the less hands-on childcare they need and receive. Most able bodied children who are not infants but also not yet adults, especially girls, can help with childcare if they have younger siblings that require hands-

29 Since the ITUS codes each household member by their relationship to the household head, the children of household heads can be matched to their parents (household head, spouse of household head).

on care and supervision. In general, children will receive some direct care and also help with childcare when they are young enough to require some hands-on care but also old enough to supervise younger siblings. They may also help their mothers with simple tasks such as fetching water, smaller bundles of firewood, and washing dishes.

Son preference arises from the greater social value assigned to sons over daughters, which shapes families preference for male over female children as well as preferential treatment of sons in the allocation of household resources. For instance, norms of gender shaped by religion and laws designate sons as the bearer of the family name (Pande and Aston 2007, Arnold, Choe and Roy 1998). Rules of inheritance and marriage pass immovable property such as land through the male line, and other assets are given away as dowry to the families that daughters marry into (Lundberg 2005, Kaur 2008, Dasgupta et al 2003). Women's standing within their husbands' families can be affected by their success in producing a son (Kaur 2008). Such norms, rules and practices shape cultural perception of sons as an asset and daughters a liability to the family.

Even as there is a rationale for parents to invest resources relatively more in sons than daughters, the gender differences between mothers and fathers may mean that son preference may not extend to mothers' time devoted to child care per se. Mothers' are more involved in childcare than fathers especially when children are young, and thus are more likely to form attachments to infants. Women also have relatively more discretion over their own time allocation than over household expenditures, which men typically control. As Pande and Aston (2007) argue, son preference is more likely in extended families in which young mothers are more constrained in their reproductive choices and decision-making. Most importantly, mothers may value daughters more than fathers do

because daughters are more likely than sons to help them with family care responsibilities.

As argued in my first chapter, norms and practices around “doing care” make it difficult for women to gain assistance from men and lead them to rely on other women in the households. In the long run, daughters-in-law may be more important than daughters because they also take responsibility for elder care. Nonetheless, daughters may also provide considerable assistance when they co-reside with parents especially relative to sons.

This reasoning generates the following hypotheses:

1. Contrary to Barcellos, Carvalho and Muney, time to child care will not be different for daughters and sons. In particular, mothers will not allocate more time on young sons than young daughters, all else equal.
2. Mothers' time devoted to child care in households with children under 6 will be lowered by the presence of older daughters more than by the presence of older sons, all else equal.
3. Mothers' time spent on indirect care will also be lowered by the presence of older daughters more than by the presence of older sons, all else equal.

These hypotheses are restated in the context of the dataset, my empirical strategy and the regression coefficients in the model I specify below.

Dataset, model and hypotheses

The Indian Time Use Survey 1998-99 (ITUS) surveys all household members aged 6 and above in the previous 24 hours. The activities described during every hour were coded after the survey using a detailed activity classification of around 150 codes

grouped under 9 mutually exclusive broad categories. The broad categories and activity codes that come under the rubric of care work are “Household Maintenance, Management and Shopping for households”, “Care for children, the sick, elderly and disabled in own household” and selected activity codes on fetching water, firewood, fodder and other forms of animal care. Keeping with the definitions I outlined above, direct care pertains to care for own household members and indirect care pertains to all other activities under care work. Within direct care, I separate activity codes specific to children from other household members to get total time spent on direct childcare alone. These include physical care of children, teaching children, accompanying children to places, supervising children with or without other activities and travel related to childcare.³⁰

I calculate time spent on care work using all types of diary days given in the dataset. This is unlike Barcellos, Carvalho and Muney who restricted their sample only to “Normal days”. While it is true that almost all respondents have normal days, almost 40 percent also have “weekly variant” and 4 percent also “abnormal days”. For this reason, following Hirway (2009), I use an algorithm that calculates time spent on any given activity as a weighted average of time spent on specific type of days (see technical appendix). This measure of time spent on an average day of the week avoids the bias of using only normal days

I restrict the sample to rural areas as this represents a distinct context, especially for indirect care work, like Barcellos, Carvalho and Muney (2014). However, unlike them, I restrict my sample to rural women married to household heads in particular

30 The values of time spent on supervisory care are very low. See Appendix C5. The measures of childcare for the Indian Time Use Survey capture hands-on care better and needs to be interpreted as such.

because their children can be identified and my aim is to assess how maternal care time varies by the gender and age composition of children. Since the ITUS codes respondents by their relationship to the household head, children of male household heads can be matched to their mother (spouse of household head).³¹ As a result, I can analyze the differences between mothers who have an infant boy and an infant girl respectively, and between mothers who have older daughters and those who have older sons. I further restrict my sample to those wives of household heads who have only their husband and no other adult present because such a restriction allows me to parse out the effects of having at least one older daughter; effects that are bound to be larger in the absence of daughters-in-law and other adult care-givers. All my sample restrictions allow me to parse out the influence of children on mothers who are as similar as possible.³²

First, I identify the cut-off age for younger and older children by plotting mothers' mean time devoted to childcare as well as indirect care against the age of their youngest child. Figure 3 shows mothers' mean time to child care declines asymptotically towards zero as the age of their youngest child declines from 1 to 17, with time to child care dropping off between 5 and 6 years. Wives with youngest child 5 years old spend on average 0.8 hours on childcare. Once the age of youngest child is 6, their mothers time on care work declines by half to 0.4, and keep declining asymptotically to almost 0.

Mothers' mean time spent on indirect care is invariant to the age of youngest child ranging between 6 to 7 hours average, and does not drop off. Based on these results, I refer to children aged 0-5 as young children who are likely to be recipients of child care,

31 However, other children i.e. grandchildren cannot be identified to their parents (married sons, daughters-in-law or married daughters of the household head).

32 In future iterations, I intend to introduce actual hours worked by older daughters and sons, and the impact on mothers' hours of work as well as the interactive effects between having daughters and daughters-in-law living in the household.

and children aged 6-17 years as older children who can potentially help their mothers with providing child care as well as indirect care. This is also consistent with the age limit of 6 years used by the ITUS to demarcate respondents to collect time use details from.

Next, I use regression analysis to estimate equations (1) – (3), which allows me to measure respectively (i) the effect of gender and number of younger children (0-5 years) on mothers' hours of child care (Y_a), (ii) the effect of gender and number of older children (6-17 years) on mothers hours of child care (Y_a), and (iii) the effect of gender and number of older children (6-17 years) on mothers hours of indirect care (Y_b). Both equations (1) and (2) have mothers' child care as the dependent variable, but are estimated for mothers with younger children and mothers with older children respectively. These are subgroups of mothers that do not overlap entirely.

$$Y_a = \alpha_1 + \sum \beta_{k1} D_{kc} + \alpha_{\beta 1} X_{\beta c} + \sum \alpha_{i1} X_i + \sum \alpha_{o\beta 1} X_{o\beta} + \sum \alpha_{\gamma 1} X_{\gamma} + \mu_{\beta 1} + \varepsilon_1 \quad \text{--- (1)}$$

$$Y_a = \alpha_1 + \sum \beta_{k2} D_{kd} + \alpha_{\beta 2} X_{\beta d} + \sum \alpha_{i2} X_i + \sum \alpha_{o\beta 2} X_{o\beta} + \sum \alpha_{\gamma 2} X_{\gamma} + \mu_{\beta 2} + \varepsilon_2 \quad \text{--- (2)}$$

$$Y_a = \alpha_1 + \sum \beta_{k3} D_{kd} + \alpha_{\beta 3} X_{\beta d} + \sum \alpha_{i3} X_i + \sum \alpha_{o\beta 3} X_{o\beta} + \sum \alpha_{\gamma 3} X_{\gamma} + \mu_{\beta 3} + \varepsilon_3 \quad \text{--- (3); where the}$$

error terms are clustered at the household level, D_{kc} is the variable that categorizes wives by the gender and number of their children aged 0-5 in equation 1, and D_{kd} the gender and number of their children aged 6-17 in equations 2 and 3. For $j=\{c,d\}$

D_{1j} : Only 1 girl and no boys

D_{2j} : Only 1 boy and no girls

D_{3j} : Only 2 girls and no boys

D_{4j} : Only 1 girl and only 1 boy

D_{5j} : Only 2 boys and no girls

$X_{\beta j}$: Presence of at least one child aged 6-17 (equation 1), or aged 0-5 (equation 2-3)

X_i : Individual controls (whether wife had any income-earning hours or not, education)³³

$X_{0\beta}$: Other household controls (social group i.e. whether Adivasi, Dalit or any other, whether land possessed is at least one acre or not, whether lived in a concrete house or not)

X_γ : Region, type of day and season controls³⁴

My hypotheses restated in terms of the regression coefficients would be

1. Among mothers with only one child under the age 6, there will be negligible differences between mothers with just one young daughter and mothers with just one young son. Among mothers with two children under the age 6, there are negligible differences between mothers with only two sons, mothers with only one son and one daughter, and mothers with two daughters respectively: $\beta_{21} = \beta_{11}$ and $\beta_{51} = \beta_{41} = \beta_{31}$, and $\beta_{k1} > 0$
2. Since children could still be the net recipients of care, it remains an open question whether the influence of children 6-17 years is negative or positive on mothers' time to childcare and indirect care respectively. If the impacts are negative, then daughters aged 6 -17 years will have larger impacts on wives' direct child care and indirect care compared to sons aged 6-17 years. If the

33 I do not add age as a control because the difference among women by stage of childbearing and rearing is measured more directly by the categorical variable of gender and age of young (or older) children and the number of older (or younger) children. Age has a strong positive correlation with the number of children.

34 Since time use is measured on an "average day" of the week, the variables categorizing the previous week of the respondent, and the season respectively are included as controls. Seasons include Kharif (July-Oct); Rabi (Nov-Feb) and summer (Mar-June). Respondents "previous week" in the dataset entail feasible combinations of three different types of diary days --- ("normal", "weekly variant", "abnormal") --- in the five following categories: (i) all 7 are normal days- (7,0,0); (ii) all are normal and weekly variant days only - (6,1,0) (5,2,0); (iii) all are normal and abnormal days only - (6,0,1) (5,0,2); (iv) all three types of days - (0,1,6), (5,1,1) (4,1,2) (4,2,1) (3,2,2), and (v) all 7 are weekly variant days- (0,7,0) or all 7 are abnormal days- (0,0,7).

impacts are positive, then daughters aged 6 -17 years will have smaller impacts or receive less net care compared to sons in the age 6-17 years:

- Either $\beta_{1i} < \beta_{2i} < 0$ and $\beta_{3i} < \beta_{4i} < \beta_{5i} < 0$;
- Or $\beta_{2i} > \beta_{1i} > 0$; and $\beta_{5i} > \beta_{4i} > \beta_{3i} > 0$; where $i=\{2,3\}$ and are coefficients pertinent to equations (2) and (3) respectively.

Empirical results

Table 6 displays the summary statistics of the sample of all wives and also for the subsets of wives without any other adult disaggregated by the age composition of children alone i.e. whether there is at least one child under 6, or between 6-17, or both, or no children under 17. As expected and consistent with Figure 3, mothers' mean child care hours are lower as the age composition of children shifts towards older children and is the least for mothers with no children at all. Table 6 also shows that mothers with young children report child care hours that are lower by 30 minutes on average when they have older children present compared to when older children are not present (columns 1 and 2, Table 6). Mean hours of indirect care are the higher when mothers have older children (6.6, and 6.5 hours). However, the sum of mean hours of child care and mean hours of indirect care are still higher for mothers with young children at ~7.8 hours compared to 6.8 and 6 hours for women with no young children, and no children at all.³⁵ The rest of my empirical results show that once we control for both gender and number of children, it

³⁵ Table 2.1 also shows that sex ratios are the least when only older children are present. This is consistent with the lower mean age of marriage for girls at approximately 15 and for boys at 21. Sex ratios are the highest when both younger and older children are present. That is, girls are likely to be in a larger family, which is consistent with the desire for more sons, or stopping to have children once the desired number of boys are had. Mothers with both older and younger children are not very different on other counts; they are not less literate or less likely to be engaged in income-earning work. They are also not more poor in terms of the proportion belonging to low income groups such as Adivasis and Dalits, of those living in concrete house, and possessing 1 acre or more.

is the presence of older daughters in particular that is associated with reduced hours of care work for their mothers.

Figure 4 (Plots 2.1 and 2.2) illustrate that controlling for the number of older children, mothers with only young daughters (and no young sons) report only the slightest difference in average hours of childcare compared to mothers with only young sons (and no young daughters). This is also true of the marginal decrease for every older child that these mothers have. Mothers of only young daughters report hours of child care lower by ~ 0.25 hours for every additional older child they have. This is true of mothers of only young sons with the exception of those who have three older children (the difference between mothers of only young sons with two older children, and three older children respectively is negligible). Thus, even if households may differentiate in the care given to daughters and sons as Barcellos, Carvalho and Muney (2014) find, my initial results show that mothers in particular do not give less care to daughters compared to sons. Nevertheless, Figure 4 do not control for the number of younger daughters or younger sons. Multivariate regression results presented further below examine this issue in greater detail.

Figure 5 (Plots 3.1 and 3.2) compare the average hours of child care of mothers with young children who only have older daughters (and no older brothers) and to mothers with younger children who only have older brothers (and no older sisters). Given the number of older children, mothers of younger children who have only older daughters spend marginally higher time on average compared to mothers who have only older sons. For instance, mothers of younger children with two older daughters spend 1.1 hours on childcare and mothers of younger children with two older sons spend 0.9 hours on

childcare. The difference is even smaller between mothers of young children with 3 daughters and with 3 sons respectively.

While older daughters do not seem to affect their mothers' hours of childcare, they do affect their mothers' hours of indirect care as evident from Figure 6 (Plots 3.3 and 3.4). Given at least one young child, mothers with only older daughters have lower hours of indirect care compared to mothers with only older sons. Mothers with young children and only one older daughter report an average of 6.4 indirect care hours and mothers with young children and three older daughters an average of ~ 6 hours (Figure 5, Plot 3.3). The corresponding figures for mothers with young children and older sons is 6.7 and ~7 hours (Figure 5, Plot 3.4). In others words, older daughters are associated with lower hours of indirect care for mothers with young children compared to older sons.

The differences in maternal time to child care and indirect care by the number as well as gender composition of younger and older children remains robust controlling for a host of other factors. After adding controls, regressing mothers hours of child care on the number and gender composition of younger children confirms that the difference between maternal time devoted to care when the youngest child is a girl under the age 6 and a boy remains close to nil at 0.05 hours, or 3 minutes (Table 7). This difference is also statistically insignificant. Among mothers with only two children under 6, the difference between having two daughters and two sons respectively is 0.01 hours (0.6 minutes) and statistically insignificant. However, mothers with one young daughter and one young son spend 0.17 hours (10 minutes) more than mothers with two young daughters, and two young sons respectively (Table 7, rows 1.1-1.5). While the difference between mothers with one young daughter and one young son on the one hand, and two

daughters or two sons on the other is still small, it is statistically significant and suggests that maternal care time is rival when mothers have a young son and a young daughter.

Regressing mothers hours of child care and indirect care respectively on the number and gender composition of older children confirms that daughters entail fewer hours of indirect care hours for their mothers' compared to sons (Table 8). For maternal time devoted to childcare, the impacts of older children are negative. However, the differences between mothers of daughters and mothers of sons are in the range of 3-5 minutes, and statistically insignificant except for the difference between mothers with two older daughters and two older sons. For maternal time devoted to indirect care, the impacts of older children are positive with smaller impacts for daughters. Mothers' with only one older daughter (no older sons) do 19 minutes less of than mothers' with only one older son (no older daughters). Mothers with only two older daughters do 19 minutes less compared to mothers with one older son and one older daughter, but the difference is statistically insignificant. However, the difference between mothers of two older daughters and mothers of two older sons is 46 minutes, and between mothers with one older son and one older daughter and two older sons is almost half an hours, and these differences are statistically significant. In short, either the presence of each additional daughter shaves off 20 minutes of indirect care work of mothers on average, or the presence of each older son is associated with an additional 20 minutes of indirect care work for mothers on average.

Conclusion

This paper builds on the work of Barcellos, Carvalho and Muney (2014), and goes beyond it by considering how “doing care” complicates the occurrence of son preference in practice. Mothers could be less influenced by son preference than fathers because daughters are more likely to assist with care responsibilities. On the one hand, both fathers and mothers may desire sons more than daughters due to powerful norms of son preferences; on the other, norms of “doing care” may mean that once daughters are born, there may be no difference between maternal care devoted to children. Since women are culturally assigned to care work, mothers form attachments to infants and also expect that daughters are more likely to help with care work than sons. While the absence of discrimination in childcare time does not mean the absence of son preference per se, it does suggest that mothers and fathers may manifest son preference in distinct ways.

Evidence from the ITUS supports my hypotheses and the underlying analysis can be extended in several respects to strengthen my arguments. These extensions are the basis for future iterations of this paper. One, since all household members aged 6 or above are surveyed for their time use, I will examine the impact of older children's hours of care work on their mothers hours of care work to assess if daughters hours have negative effect that is at least larger than a negative effect of boys. Two, given the cultural differences between the low income groups Adivasis and Dalits, where Adivasis tend to be relatively relaxed on norms of gender and doing care, it is also worth examining whether Dalit mothers and all others mothers give more child care time to sons than to daughters, and whether Adivasi mothers rely on their daughters relatively

more than Dalit and all others mothers. These extensions would add to the robustness of my arguments on the interaction between son preference and “doing care”.

Such empirical analysis is relevant to understanding how “doing care” limits the opportunity of girls to receive formal training and the kind of jobs that could allow them to reduce the time burden of care work, as they grow older. Norms around “doing care” that hold women responsible for care work generates time burden for girls, and not just for older women. If girls are expected to help with household chores and the care of younger siblings more than sons, then daughters are also less likely to attend school. My research shows that girls helping their mothers to provide care must be accounted for in studies on the differential treatment of boys and girls in allocation of resources in households.

APPENDIX A

TABLES

Table 1: Average hours spent on care work, income-earning work and all work

Panel A: Including zero hours of work						
		Wives' hours (N=10308)	Husbands' hours (N=10308)	Difference between wives' and husbands' hours		
1	All work	10.0 (0.03)	8.4 (0.03)	1.5*** (0.03)		
2	Care work	6.7 (0.03)	0.7 (0.01)	6*** (0.03)		
3	All income-earning work	3.3 (0.03)	7.7 (0.03)	-4.4*** (0.04)		
3.1	Unpaid but income-earning work	1.6 (0.02)	3.1 (0.03)	-1.5*** (0.03)		
3.2	Paid work	1.7 (0.03)	4.6 (0.04)	-2.9*** (0.04)		
Panel B: Excluding zero hours of work						
		Wives' hours	Husbands' hours	% Wives with hours worked > 0	% husbands with hours worked > 0	Difference between wives' and husbands' hours
1	All work	10.1 (2.6)	8.7 (2.4)	99.5	97.5	1.4*** (0.03)
2	Care Work	6.8 (2.8)	1.3 (1.3)	98.8	57.5	5.7*** (0.04)
3	All income-earning work	4.4 (2.9)	8.1 (2.3)	75.2	95.8	-3.8*** (0.04)
3.1	Unpaid but income-earning work	2.5 (2.2)	3.7 (3.4)	59.7	79.6	-1.7*** (0.04)
3.2	Paid work	4.4 (2.8)	6.7 (2.7)	38.9	69.6	-2.4*** (0.05)

Note: Hours of work are measured by time spent on an “average day” (see Appendix C3 for details on how “average day” is calculated.). All work (Row 1) is the sum of care work (Row 2) and income-earning work (Row 3). All income-earning work (Row 3) is the sum of unpaid but income-earning work (Row 3.1) and paid work (Row 3.2). The standard errors from T-Test of difference of means are reported in the parentheses in Panel A. Panel B gives hours worked for wives and husbands excluding zero values, with SDs reported in parentheses below. The difference between husbands and wives are based on T-Tests that include only those husband-wife pairs who both have non-zero values, and the parentheses below report standard errors. The % of wives and husbands who worked respectively do not add up to 100% because some respondents do both care and income-earning work, or both paid and unpaid work.

Table 2: Average time spent in all work and care work for married persons with and without daughter(s)-in-law, and by social group

		Wives' hours of work			Husbands' hours of work		
		Care work	Income-earning work	Total work	Care work	Income-earning work	Total work
Panel 1							
1	No daughter-in-law lives in household (n=8993)	7.1 (0.03)	3.2 (0.03)	10.2 (0.03)	0.8 (0.01)	7.8 (0.03)	8.6 (0.03)
2	At least one daughter-in-law lives in household (n=1315)	4.5 (0.08)	3.7 (0.09)	8.3 (0.09)	0.6 (0.03)	7.0 (0.09)	7.6 (0.08)
3	Difference between 1 and 2	2.5*** (0.08)	-0.6*** (0.09)	1.9*** (0.08)	0.2*** (0.04)	0.8*** (0.8)	1.0*** (0.08)
Panel 2							
4	Adivasi (n=1915)	6.6 (0.07)	4.2 (0.07)	10.8 (0.05)	1.0 (0.03)	7.8 (0.06)	8.8 (0.05)
5	Dalit (n=1926)	6.5 (0.07)	3.4 (0.07)	9.9 (0.06)	0.8 (0.03)	7.4 (0.06)	8.2 (0.06)
6	Other (n=6467)	6.8 (0.04)	2.9 (0.03)	9.7 (0.04)	0.7 (0.01)	7.7 (0.04)	8.4 (0.03)
7	Difference between Adivasi and Dalit	0.1 (0.1)	0.8*** (0.1)	0.9*** (0.08)	0.2*** (0.04)	0.4*** (0.08)	0.6*** (0.03)
8	Difference between Dalit and Other	-0.3*** (0.07)	0.5*** (0.07)	0.2*** (0.07)	0.1*** (0.03)	-0.3** (0.07)	-0.2** (0.07)

Note: Hours of work are measured by time spent on an “average day”. Hours of work include zeros and hence are averages over population of all women, men, wives and husbands respectively. All work is the sum of care work and income-earning work. In Panel 1, married couples were distinguished by whether there was at least one daughter-in-law present in the household, or not. The standard errors from t-test of difference of means between women (or their husbands) who had no daughter-in-law and those who had at least one daughter-in-law are reported in the parentheses. In Panel 2, their social group distinguished married couples. The standard errors from t-test of difference of means between Adivasi and Dalits (or Dalits and Others) are reported in the parentheses. Statistical significance of differences at 1, 5 and 10 percent are represented by ***, **, * respectively

Table 3: OLS regression with income-earning hours as independent variable for wives and husbands

	Wife's care work hours (1)	Wife's total work hours (2)	Husband's care work hours (3)	Husband's total work hours (4)
Wife's income- earning hours	-0.56*** (0.008)	0.44*** (0.008)		
Husband's income-earning hours			-0.14*** (0.008)	0.86*** (0.008)
Constant	8.62*** (0.04)	8.62*** (0.04)	1.81*** (0.07)	1.80*** (0.07)
R ²	0.37	0.26	0.11	0.83

*Notes: N=10308 in all four models. Hours of work are measured by time spent on an "average day", see Appendix for details on how "average day" is calculated. Hours of work include zeros. All work is the sum of care work and income-earning work. Statistical significance of coefficients at 1, 5 and 10 percent are represented by ***, **, * respectively. Parentheses contain heteroskedasticity-consistent standard errors.*

Table 4: Marginal hours - Change in care and total work hours associated with unit increase of independent variables (continued onto next page)

	Wife's care work hours	Wife's total work hours	Wife's care work hours	Wife's total work hours	Husband's care work hours (5)	Husband's total work hours (6)	Husband's care work hours (7)	Husband's total work hours (8)
	(1)	(2)	(3)	(4)				
Own income-earning hours	-0.58*** (0.01)	0.42*** (0.01)	-0.57*** (0.01)	0.43*** (0.01)	-0.15*** (0.03)	0.85*** (0.01)	-0.16*** (0.01)	0.84** (0.01)
Spouses' income-earning hours	0.15*** (0.01)	0.15*** (0.01)	0.11*** (0.01)	0.11*** (0.01)	0.001 (0.004)	0.001 (0.004)	0.01*** (0.005)	0.01** (0.004)
Own-child-to-adult ratios	1.03*** (0.05)	1.03*** (0.05)	0.74*** (0.06)	0.74*** (0.06)	0.36*** (0.03)	0.36*** (0.03)	0.25*** (0.03)	0.25*** (0.03)
At least one daughter-in-law co-resides	-1.61*** (0.08)	-1.61*** (0.08)	-1.46*** (0.09)	- 1.46*** (0.09)	-0.19*** (0.04)	-0.19*** (0.04)	-0.03 (0.04)	-0.03 (0.04)
Social group: Dalit	-0.48*** (0.08)	-0.48*** (0.08)	-0.13* (0.08)	-0.13* (0.08)	-0.19*** (0.05)	-0.19*** (0.05)	-0.01 (0.04)	-0.01 (0.04)
Social group: Others	-0.31*** (0.07)	-0.31*** (0.07)	-0.04 (0.07)	-0.04 (0.07)	-0.16*** (0.04)	-0.16*** (0.04)	0.02 (0.04)	0.02 (0.04)
Age			0.06*** (0.01)	0.06*** (0.01)			0.03*** (0.006)	0.03*** (0.006)
Age squared			0.00*** (0.000)	0.00*** (0.000)			0.00*** (0.0001)	-0.00*** (0.0001)
Wife's education: Primary			0.072 (0.19)	0.072 (0.19)				
Middle			-0.22* (0.11)	-0.22* (0.11)				
Secondary			0.07 (0.19)	0.07 (0.19)				
Higher secondary and above			-0.10 (0.23)	-0.10 (0.23)				
Husband's education: Primary			0.06 (0.06)	0.06 (0.06)			0.02 (0.03)	0.02 (0.03)
Middle			0.23* (0.08)	0.23* (0.08)			0.16*** (0.05)	0.16*** (0.05)
Secondary			0.08 (0.11)	0.08 (0.11)			0.01 (0.05)	0.01 (0.05)

Higher secondary and above			-0.05 (0.13)	-0.05 (0.13)			0.07 (0.06)	0.07 (0.06)
Does not live in mud house			-0.11* (0.06)	-0.11* (0.06)			0.0003 (0.03)	-0.001 (0.03)
Land possessed > 1 acre			0.18*** (0.05)	0.18*** (0.05)			0.036 (0.03)	0.033 (0.03)
Type of day: Normal and weekly variant			0.05 (0.06)	0.05 (0.06)			0.26*** (0.03)	0.26*** (0.03)
Normal and Abnormal			-0.07 (0.15)	-0.07 (0.15)			0.15** (0.07)	0.15** (0.07)
All three days			-0.36* (0.19)	-0.36* (0.19)			0.15* (0.08)	0.16* (0.08)
Weekly variant and abnormal			-2.0 (1.4)	-2.0 (1.4)			1.65 (1.17)	1.83* (1.17)
Season: Winter '98-'99			0.56*** (0.06)	0.56*** (0.06)			0.06* (0.03)	0.06* (0.03)
Summer '99			0.60*** (0.06)	0.60*** (0.06)			0.09*** (0.03)	0.09*** (0.03)
Other seasons			0.62*** (0.11)	0.62*** (0.11)			0.17*** (0.06)	0.17*** (0.06)
State: Haryana			0.36*** (0.10)	0.36*** (0.10)			-0.22*** (0.05)	-0.22*** (0.05)
Gujarat			0.73*** (0.07)	0.73*** (0.07)			-0.12*** (0.04)	-0.12*** (0.04)
Orissa			0.58*** (0.08)	0.58*** (0.08)			0.28*** (0.05)	0.28*** (0.05)
Tamilnadu			-0.63** (0.08)	-0.63** (0.08)			-0.15*** (0.03)	-0.15*** (0.03)
Meghalaya			0.54*** (0.16)	0.54*** (0.16)			0.71*** (0.12)	0.71*** (0.12)
Constant	7.64*** (0.10)	7.64*** (0.10)	6.58*** (0.28)	6.58*** (0.28)	1.91*** (0.29)	1.93*** (0.09)	1.17*** (0.15)	1.18*** (0.15)
R ²	0.48	0.39	0.53	0.45	0.14	0.83	0.19	0.84

Notes: N=10303 in all models. Hours of work include zeros, and measured by time spent on an “average day”. All work is the sum of care work and income-earning work. Statistical significance at 1, 5 and 10 percent represented by ***, **, * respectively. Parentheses contain heteroskedasticity-consistent standard errors. Own-child-to-adult ratios are those of couples' children aged 0-5 to all adults aged 15-75 who also live in the same household. At least one daughter-in-law co-resides is a binary. Social group (reference: Adivasis). Controls: age, education (reference: not literate), does not live in mud house (reference: live in mud house), land possessed is above 1 acre or above (reference: land possessed is less than 1 acre); state (reference: Madhya Pradesh), type of day (reference: all normal days) and season (reference: rainy season 1998).

Table 5: Marginal hours - Change in care and total work hours associated with unit increase of independent variables for each social group (continued onto next page)

	Wife's total work hours			Husband's total work hours		
	Adivasi (1)	Dalit (2)	Others (3)	Adivasi (4)	Dalit (5)	Others (6)
<i>Own income-earning hours</i>	0.34*** (0.02)	0.46*** (0.02)	0.45*** (0.01)	0.76*** (0.03)	0.86*** (0.02)	0.85*** (0.01)
Difference in coefficients: Dalit and Adivasi		0.12***			0.1***	
Difference in coefficients: Dalit and Others			0.01			0.01
<i>Spouses' income-earning hours</i>	0.08*** (0.03)	0.11*** (0.02)	0.11*** (0.01)	-0.01 (0.01)	0.01* (0.008)	0.02*** (0.005)
Difference in coefficients: Dalit and Adivasi		0.03			0.02	
Difference in coefficients: Dalit and Others			0			0.01
<i>Own-child-to -adult ratios</i>	0.50*** (0.11)	0.83*** (0.11)	0.79*** (0.08)	0.19*** (0.08)	0.21*** (0.07)	0.27*** (0.04)
Difference in coefficients: Dalit and Adivasi		0.33**			0.02	
Difference in coefficients: Dalit and Others			0.04			0.06
<i>At least one daughter-in-law co-resides</i>	-1.35*** (0.20)	-1.25*** (0.23)	-1.5*** (0.11)	-0.03 (0.09)	-0.01 (0.12)	-0.02 (0.05)
Difference in coefficients: Dalit and Adivasi		-0.1			0.02	
Difference in coefficients: Dalit and Others			-0.25			0.01
Age	0.05 (0.04)	0.11*** (0.03)	0.06*** (0.02)	0.037** (0.019)	0.02 (0.01)	0.04*** (0.007)
Age squared	-0.00* (0.0005)	-0.00*** (0.0003)	-0.00*** (0.0002)	-0.00** (0.0002)	-0.00* (0.0001)	-0.00** (0.00008)
<i>Wife's education:</i>						
Primary	-0.30** (0.14)	0.17 (0.14)	-0.07 (0.08)			
Middle	-0.08 (0.32)	0.18 (0.28)	-0.26** (0.13)			
Secondary	0.12 (0.40)	-0.26 (0.38)	0.09 (0.22)			
Higher secondary and above	-0.30 (0.77)	0.42 (0.52)	-0.20 (0.25)			
<i>Husband's education:</i>						
Primary	0.37*** (0.11)	0.18 (0.12)	-0.08 (0.08)	0.15** (0.07)	0.03 (0.06)	-0.05 (0.03)

Middle	0.49*** (0.20)	0.24 (0.20)	0.15 (0.10)	0.45*** (0.13)	0.12 (0.12)	0.10* (0.05)
Secondary	0.05 (0.35)	0.74*** (0.21)	-0.08 (0.12)	0.54* (0.29)	-0.09 (0.09)	-0.05 (0.05)
Higher secondary and above	0.67* (0.41)	-0.21 (0.29)	-0.17 (0.15)	0.12 (0.15)	-0.83 (0.11)	0.07 (0.07)
Does not live in mud house	0.20 (0.20)	-0.34** (0.15)	-0.08 (0.07)	-0.07 (0.13)	-0.009 (0.08)	0.01 (0.03)
Land possessed > 1 acre	0.08 (0.11)	0.25* (0.12)	0.16*** (0.06)	-0.04 (0.06)	0.04 (0.07)	0.04 (0.03)
<i>State:</i>		0.38** (0.18)	0.31*** (0.12)		-0.25*** (0.08)	-0.17*** (0.06)
Haryana						
Gujarat	0.76*** (0.13)	0.90*** (0.24)	0.65*** (0.09)	-0.12 (0.09)	0.13 (0.12)	-0.10** (0.04)
Orissa	0.84*** (0.14)	0.77*** (0.19)	0.33*** (0.11)	0.02 (0.1)	0.32*** (0.10)	0.37*** (0.06)
Tamilnadu	-1.05*** (0.23)	-0.69*** (0.14)	-0.65*** (0.10)	-0.43*** (0.12)	-0.13* (0.07)	-0.08** (0.04)
Meghalaya	0.33* (0.17)	0.72 (0.65)	1.78*** (0.54)	0.35** (0.14)	1.17*** (0.14)	0.79*** (0.17)
<i>Type of day:</i> Normal and weekly variant	0.12 (0.12)	0.07 (0.11)	0.01 (0.07)	0.42*** (0.09)	0.24*** (0.06)	0.18*** (0.04)
Normal and Abnormal	-0.31 (0.25)	-0.19 (0.25)	0.06 (0.21)	-0.48*** (0.15)	0.07 (0.13)	0.28*** (0.09)
All three days	0.19 (0.58)	-0.27 (0.31)	-0.40* (0.24)	0.58*** (0.16)	0.28 (0.25)	0.04 (0.10)
Weekly variant and abnormal	-4.46* (2.67)	0.99 (1.60)	-0.69 (0.89)	2.8** (1.35)	-0.55** (0.18)	0.89 (0.10)
<i>Season:</i>	0.36*** (0.13)	0.56*** (0.13)	0.60*** (0.08)	-0.02 (0.07)	0.13** (0.06)	0.03 (0.04)
Winter 98-99						
Summer 99	0.59*** (0.13)	0.68*** (0.13)	0.57*** (0.08)	0.29*** (0.08)	0.16*** (0.06)	-0.002 (0.04)
Other	0.23 (0.19)	0.85*** (0.26)	0.64*** (0.13)	0.31** (0.14)	0.17 (0.13)	0.11* (0.07)
Constant	7.58*** (0.74)	5.12*** (0.52)	6.73*** (0.36)	1.83*** (0.41)	1.35*** (0.32)	1.10*** (0.18)
N	1915	1926	6462	1915	1926	6462
R ²	0.42	0.45	0.46	0.75	0.85	0.86

Notes: Hours of work include zeros, and measured by time spent on an “average day”. All work is the sum of care work and income-earning work. Statistical significance of coefficients and difference in coefficients at 1, 5 and 10 percent represented by ***, **, * respectively. Parentheses contain heteroskedasticity-consistent standard errors. Variables defined same as in notes of Table 1.4

Table 6: Summary of sample characteristics

	All wives	Wives without any other adult in household (except husband)			
		At least one child aged 0- 5 and no child 6-17	At least one child aged 0-5 and at least one child 6-17	No child aged 0-5 and at least one child 6-17	No child aged 0-5 and no child 6-17
<i>Frequency (N)</i>	10263	1837	1717	1360	1348
<i>Dependent variables</i>					
Mean hours of child care per day*	0.8	1.6	1.1	0.3	0.1
Mean hours of indirect care per day*	6	6.2	6.6	6.5	5.9
<i>Independent variables</i>					
Average no: of children aged 17 or below	1.6	1.9	3.4	2	-
Sex ratio: girls per 1000 boys	853	847	941	659	-
Mean age of wives **	33.6	26.2	32.1	36.5	43.7
% Wives with any income -earning hours	74.6	68.8	78.4	78.5	73.9
% Wives by education: Not literate	65.3	61.2	68.3	59.5	70.2
5 th grade or below	23.7	25.2	22.3	27.3	21.9
8 th grade	6.7	7.8	5.4	7.9	5.7
10 th grade	2.8	3.5	2.5	3.4	1.6
12 th grade/higher	1.4	2.2	1.5	1.9	0.6
% Wives by social group					
Adivasi	18.3	23.5	20.8	16.3	18.1
Dalit	19.1	20.8	19.3	19.2	24.1
Any other	62.6	55.7	59.9	64.5	57.8
% Wives who live in concrete house	26	19.3	21.5	31.2	23
% Wives in households with land >= 1 acre	43.1	34.8	40	41.2	35.9
Mean land (acres)	1.7	1.4	2.1	1.8	1.4

* Time use is measured as hours on an average day. ** Age is positively correlated with the age composition of children and not included in the model below.

Table 7: Multivariate regressions of mother's hours of childcare on the gender and age composition of young children (continued onto next page)

	Mother's hours of child care (1)	Mother's hours of child care (2)
<i>Gender composition of young children</i>		
Only one girl under 6 and no boys	0.87*** (0.05)	0.83*** (0.05)
Only one boy under 6 and no girls	0.91*** (0.05)	0.88*** (0.05)
Only two girls under 6 and no boys	1.23*** (0.06)	1.21*** (0.07)
Only one girl and one boy under 6	1.42*** (0.06)	1.38*** (0.06)
Two girls under 6 and no boys	1.23*** (0.07)	1.22*** (0.07)
At least one child aged 6-17 is present	-0.17*** (0.03)	-0.17*** (0.03)
Has non-zero income-earning hours		-0.37*** (0.04)
<i>Education</i>		
Some schooling		0.02 (0.03)
Completed schooling		0.40** (0.19)
Has higher education		0.01 (0.05)
<i>Social Group</i>		
Dalit		-0.04 (0.05)
Others		0.10** (0.05)
Has 1 acre of land or more		0.02 (0.03)
Does not live in a mud house		-0.07* (0.04)
<i>Season</i>		
Winter 1998-99		-0.08** (0.04)
Summer 1999		-0.07* (0.04)

Other		0.06 (0.08)
<i>Type of day</i>		
Normal and Weekly Variant		0.01 (0.03)
Normal and Abnormal		0.12 (0.09)
Normal, Weekly Variant and Abnormal		0.14 (0.13)
Weekly Variant and Abnormal		-0.37 (0.40)
<i>State</i>		
Madhya Pradesh		-0.28*** (0.06)
Gujarat		-0.02 (0.07)
Orissa		-0.09 (0.07)
Tamil Nadu		-0.24*** (0.06)
Meghalaya		0.01 (0.13)
<i>Constant</i>	0.26*** (0.03)	0.70** (0.09)
N	0.3	0.34
R squared	6262	6262

Notes: Hours of work include zeros, and measured by time spent on an “average day”. Statistical significance at 1, 5 and 10 percent represented by ***, **, * respectively. Parentheses contain heteroskedasticity-consistent standard errors. The main categorical variable is the gender composition of young children and classifies mothers' by the gender composition of young children. While the categories relevant to the model/reported here are mothers who have one to two children, this variable also accounts for mothers who have 3, 4 and 5 children 0- 5 years or 6-17 years respectively. The reference group is thus mothers who have no children 0-5 years or 6-17 years respectively. Control variables are education (reference: not literate), social group (reference: Adivasi), has 1 acre of land or more (reference: less than 1 acre), does not live in mud house (reference: lives in mud house/partially concrete), season (reference: rainy season 1998), type of days (reference: all normal days), and state (reference: Haryana).

Table 8: Multivariate regression of mother's hours of childcare, and hours of indirect care respectively on the gender and age composition of older children (continued onto next page)

	Mother's hours of child care (1)	Mother's hours of child care (2)	Mother's hours of indirect care (3)	Mother's hours of indirect care (4)
<i>Gender composition of older children</i>				
Only one girl 6-17 years and no boys	-0.11* (0.06)	-0.11* (0.06)	0.16 (0.15)	0.14 (0.14)
Only one boy 6-17 years and no girls	-0.17*** (0.05)	-0.16*** (0.04)	0.40*** (0.11)	0.43*** (0.10)
Only two girls under 6-17 years and no boys	-0.14** (0.07)	-0.11* (0.06)	-0.02 (0.26)	0.12 (0.24)
Only one girl and one boy 6-17 years	-0.19*** (0.06)	-0.17*** (0.06)	0.39** (0.16)	0.44*** (0.15)
Two girls 6-17 years and no boys	-0.23*** (0.06)	-0.25*** (0.06)	1.00** (0.15)	0.89*** (0.14)
<i>Other Variables</i>				
At least one child aged 0-5 is present	1.20*** (0.03)	1.17*** (0.03)	0.19** (0.08)	0.04 (0.07)
Has non-zero income-earning hours		-0.37*** (0.04)		-1.25*** (0.08)
Education				
Some schooling		-0.01 (0.03)		0.26*** (0.08)
Completed schooling		0.32* (0.19)		0.14 (0.35)
Has higher education		-0.07 (0.18)		-0.53 (0.41)
Social Group				
Dalit		-0.02 (0.05)		0.17 (0.12)
Others		0.11** (0.05)		0.41*** (0.10)
Has 1 acre of land or more		0.02 (0.03)		0.29*** (0.07)
Does not live in a mud house		-0.07* (0.04)		0.08 (0.09)
Season				

Winter 1998-99		-0.08** (0.04)		0.85*** (0.09)
Summer 1999		-0.05 (0.04)		0.88*** (0.09)
Other		0.07 (0.08)		1.01*** (0.15)
Type of day				
Normal and Weekly Variant		0.01 (0.03)		-0.05 (0.08)
Normal and Abnormal		0.12 (0.09)		0.05 (0.22)
Normal, Weekly Variant and Abnormal		0.08 (0.12)		-0.20 (0.29)
Weekly Variant and Abnormal		-0.39 (0.39)		-3.53 (1.35)
State				
Madhya Pradesh		-0.28*** (0.06)		-0.92*** (0.14)
Gujarat		-0.02 (0.07)		-0.57*** (0.14)
Orissa		-0.12* (0.07)		0.12 (0.16)
Tamil Nadu		-0.30*** (0.06)		-1.77*** (0.13)
Meghalaya		0.08 (0.13)		-0.31 (0.24)
Constant	0.25*** (0.02)	0.72** (0.09)	6.02*** (0.07)	6.79*** (0.18)
N	0.27	0.31	0.02	0.17
R squared	6262	6262	6262	6262

Note: Hours of work include zeros, and measured by time spent on an “average day”. Statistical significance at 1, 5 and 10 percent represented by ***, **, * respectively. Parentheses contain heteroskedasticity-consistent standard errors. The main categorical variable is the gender composition of older children and classifies mothers' by the gender composition of older children. While the categories relevant to the model/reported here are mothers who have one to two children, this variable also accounts for mothers who have 3, 4 and 5 children 0-5 years or 6-17 years respectively. The reference group is thus mothers who have no children 0-5 years or 6-17 years respectively. Controls variables are the same as those described in notes of Table 2.2

APPENDIX B

FIGURES

Figure 1: LOWESS plot of wives and husbands' hours of care work and of total work by own-children-to-adult ratios

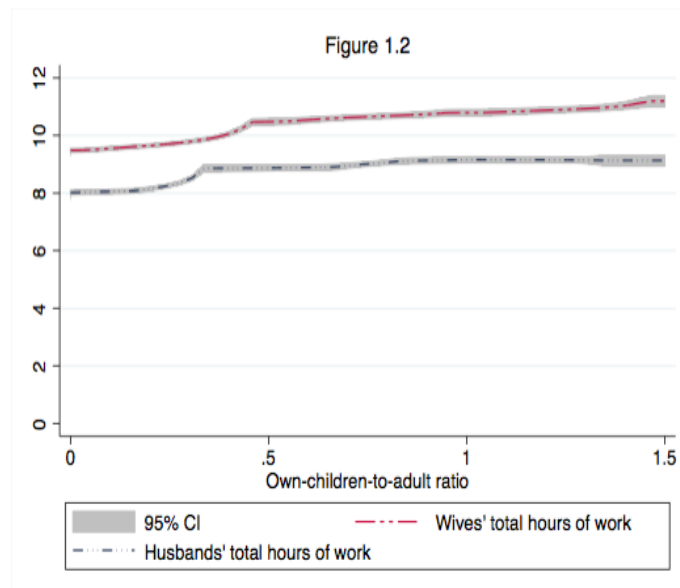
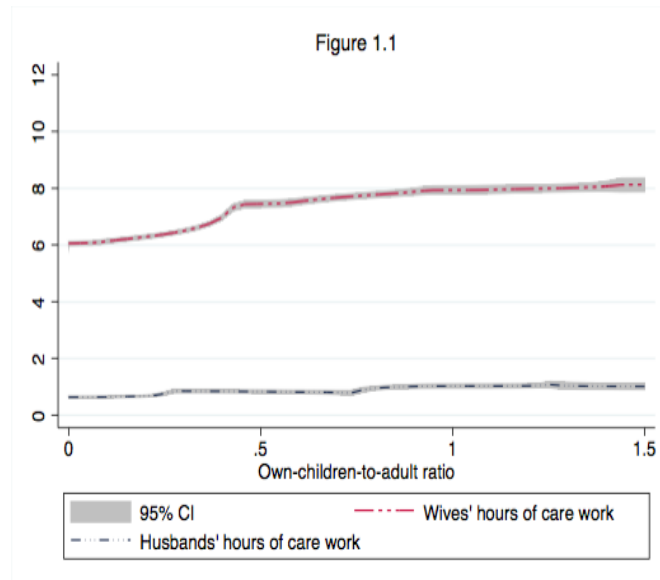


Figure 2: LOWESS plot of wives and husbands' hours of care work and of total work by income-earning hours

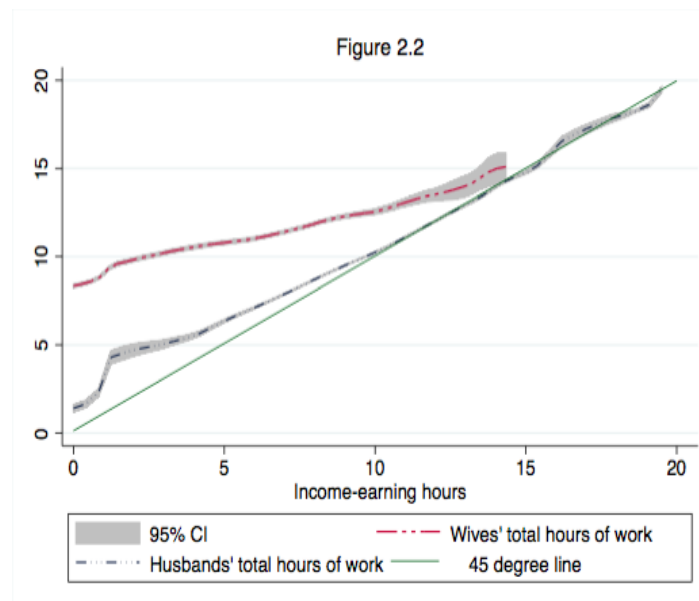
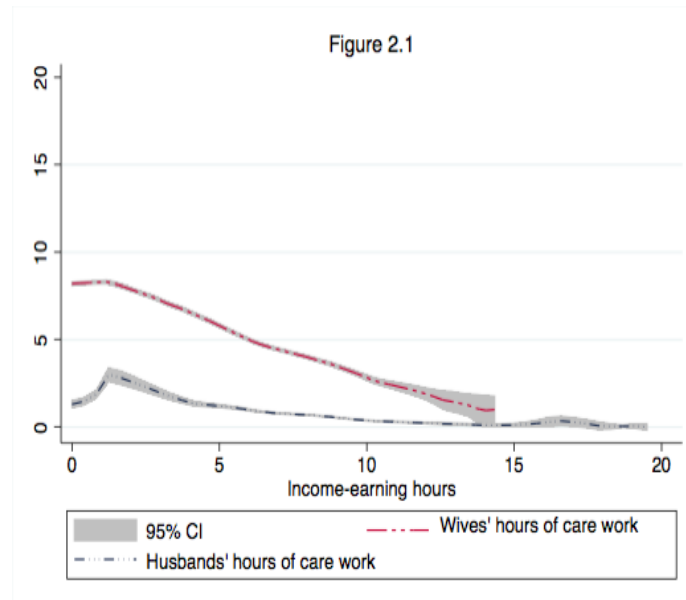


Figure 3: Mother's average hours of child care and of indirect care by the age of their youngest child

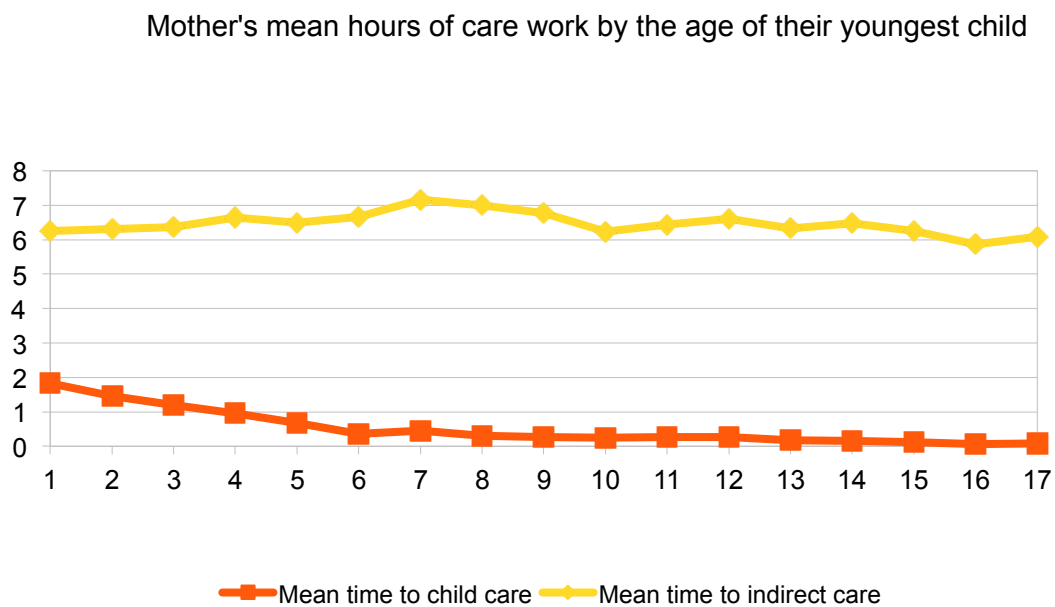


Figure 4: LOWESS plots 2.1 and 2.2 of mothers' time to childcare by the presence and gender of young children and the number of older children

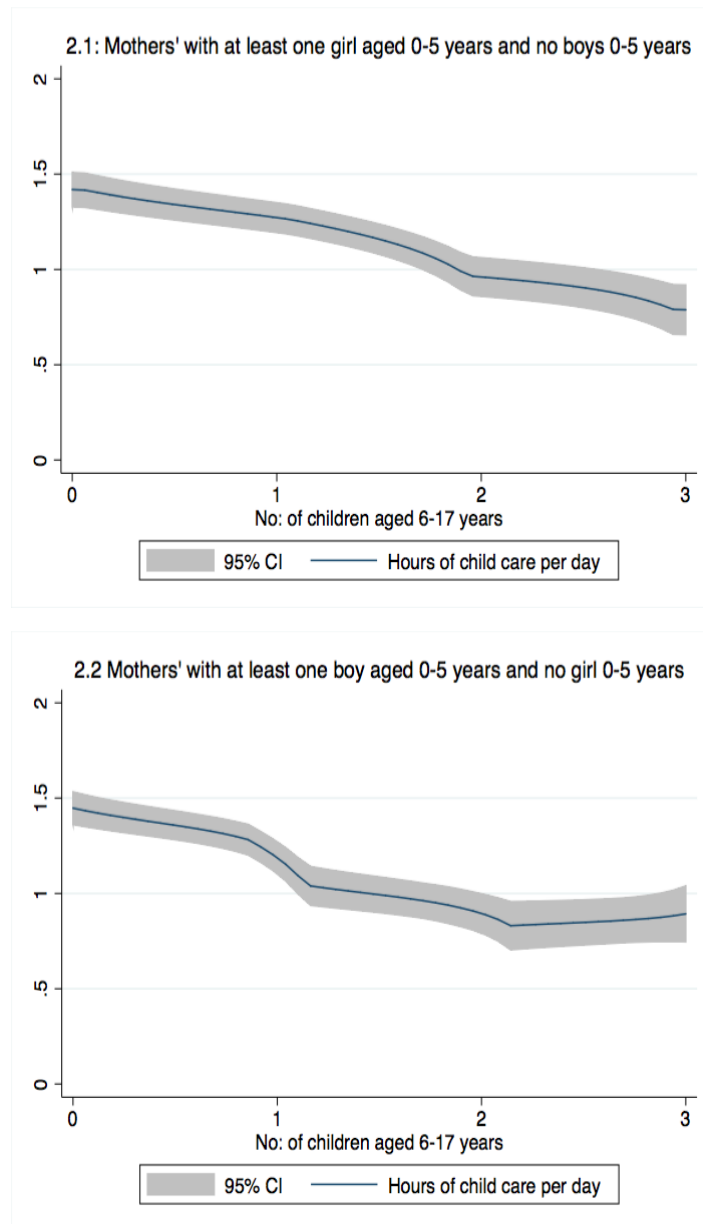
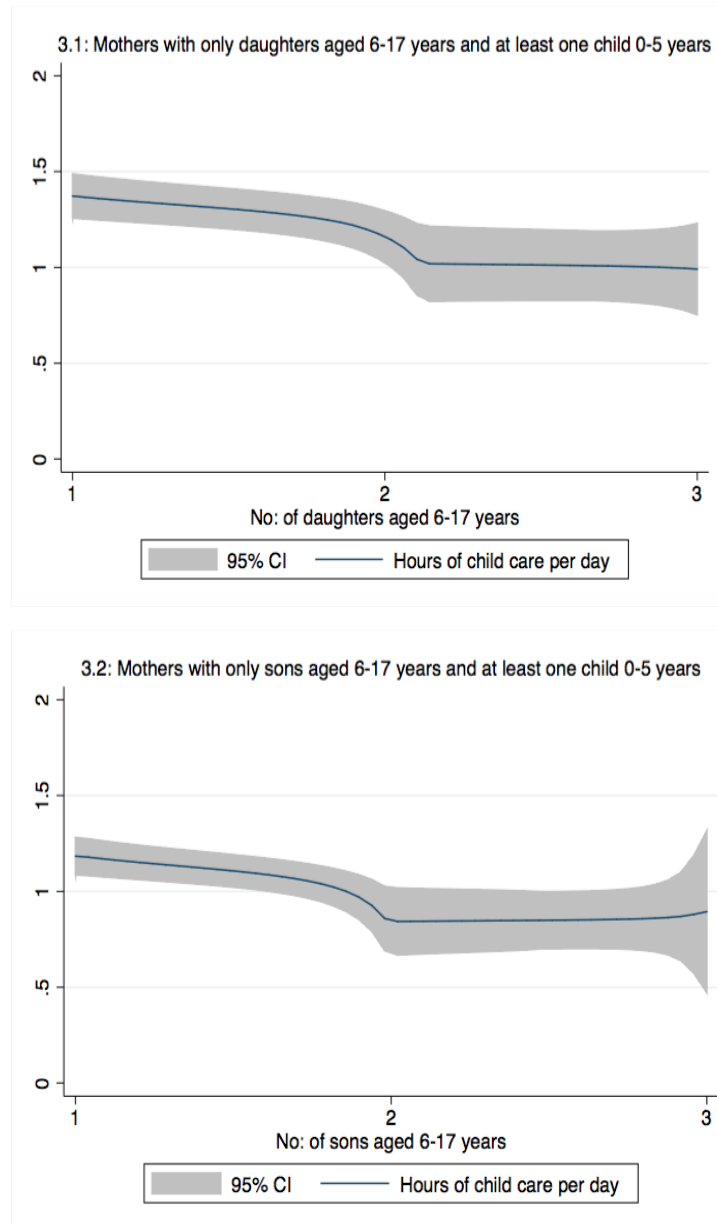
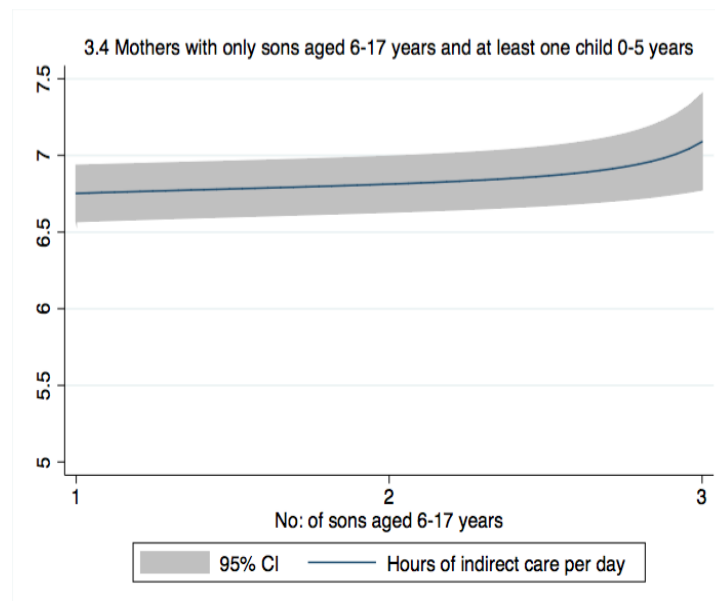
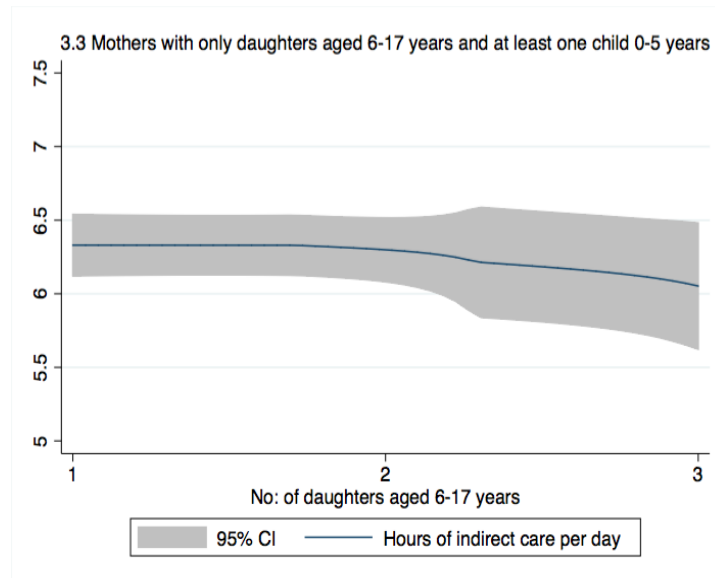


Figure 5: LOWESS plots 3.1 and 3.2 of mothers' time to childcare given the gender and number of older children and the presence of at least one young child



Figures 6: LOWESS plots 3.3 and 3.4 of mothers' time to indirect care given the gender and number of older children



APPENDIX C

TECHNICAL APPENDIX

C1: Corresponding Definitions and Measures of Care Work from the ITUS

Table 9 outlines the distinctions I make between care work and income earning work, and how these fit with paid and unpaid, SNA and non-SNA distinctions. Care work includes unpaid direct and indirect care (rows 1-2, Table 9). Direct care refers to the physical care of children, the sick, the elderly, the disabled, or family members, and indirect care refers to various household chores to assist in such caring such as meal preparation, cleaning, shopping for groceries etc. In rural areas, indirect care also includes SNA activities such as fetching drinking water, carrying loads of fuel wood and animal fodder, making "dung cakes" (fuel for earthen stoves), kitchen gardening, foraging for berries, fruits etc; tasks that are vital to preparing meals and supplementing them respectively.

Beyond care work, there is income-earning work (Row 4, Table 9), but the boundaries between these are fuzzy (Row 3, Table 9). In India, typically agricultural produce is typically divided into portions for home consumption and for sale in the market, but such produce was grown on the same plot of land. When activities such as sowing, weeding, etc are unpaid, they are unpaid because family members perform them. Yet the produce is at least partly, if not wholly for sale. Given the indivisibility of labor inputs, I place all unpaid and paid agricultural activities in income earning work but treat them as spanning unpaid and paid SNA activities (Row 3, columns 2 and 3). These demarcations are necessary for my analysis on how time to care work and income earning work reflect gender differences in the workday.

Table 9: Care work and Income earning work correspondence to Non-SNA and SNA work

	Non-SNA work	Unpaid SNA	Paid SNA
Care work - Direct Care	Care for the children, the sick, the elderly and disabled for own household, also accompanying adults to personal care services, care of guests and visitors to the household		**
Care work - Indirect care	Cooking and serving food, etc, cleaning and upkeep of household, shopping for groceries, household planning, supervision, maintenance and management.	* Fetching water, fuel, fodder, Kitchen gardening, collecting fruits, and other minor forest produce, making dung cakes and wood chopping; Building and maintaining the homestead	**
Income-earning work and indirect care continuum		Agricultural and allied activities: Crop farming, animal husbandry, fishing, horticulture, processing of grains and storage, Fetching water, fuel, fodder, Kitchen gardening, collecting goods.	
Income-earning work		Construction of walls, fencing, roads etc Manufacturing, Construction, Trade, Business and Services	Construction of walls, fencing, roads etc Manufacturing, Construction, Trade, Business and Services

Note: * I assume that when these are unpaid they are for home consumption and locate them in indirect care. When these are paid, I include them in income-earning work like other agricultural and allied activities. ** Services also include domestic services such as nannying, cleaning, sweeping, which should be paid SNA and care work. However, such data in the ITUS is clubbed together with other "petty services" such as cobbler, plumber etc., as a result of which I cannot make distinction between paid care and unpaid care.

Note that my treatment of agricultural work is different from my treatment of SNA activities such as fetching water, fuel, kitchen gardening, making dung cakes etc.

However, the Indian time use survey data itself show that fetching water etc are largely unpaid. The National Sample Surveys on consumption expenditure further show that almost a third of household needs of food, water, etc are met by unpaid work. Thus I treat these activities as indirect care when unpaid because I assume they are directed towards home consumption. Otherwise, I treat them as income earning work.

C2: Purposive sampling methodology for qualitative field research

I used purposive stratified sampling to get my sample respondents. There were some differences in my sampling in BN and SN due to logistical difficulties and limited time. While the sample I gathered is not representative of each village, it is illustrative of gender differences in how married couples spend their days, and how each spouse perceived these differences. Villages in the Nimad region of Bagli, Madhya Pradesh are typically comprised of 50-250 households. Most of these villages are populated by various Adivasi tribes and located on undulating, sloping terrain of poor quality soil. The few villages with better soil and topography tended to be populated by a middle caste, known as Sirvis. BN is largely populated by Adivasis with less than 10% being Sirvis, Dalits and Muslims. SN is a wealthier village populated by both Sirvis (~50%) and Adivasis (~50%).

In BN, I interviewed couples from 30 households. My sampling frame was based on Self-Help Group (SHG) formation for the following reasons: (i) almost every household (co-residing; and eating from the same pot) had a female family member who belonged to SHGs (formed to facilitate group savings/loan activities), (ii) SHGs had 18-22 members each, all married women aged 55 and below, and (iii) each SHG was formed from the same community/tribes (Bhilala, Barela, Korku, Muslim, Dalit), among

households of similar economic status (just above the government poverty line, below it or well below it) and main source of livelihood (cultivation/wage labor/non-agricultural occupation). Of the 16-18 SHGs operating in the area, I picked five groups randomly to ensure adequate representation for economic status, main tribes, and religion/caste. Within each SHG, I divided members into four strata based on age group and position within family i.e. whether they were 20-35 or 35-55, either has daughters-in-law or is a daughter-in-law herself. I also distinguished whether a woman was single or not (migrant husband/widowed/ divorced/separated). I randomly picked 5-6 women in each SHG and strata, and interviewed them and their household members (typically husband, and in-laws wherever applicable). Of these I had just 1 Dalit household. In addition, I randomly picked a middle caste household, as these formed the village merchant class and were not part of any SHG (7-8 out of approximately 200 households).

In SN, SHGs were not as widespread and hence my sampling frame came from asking key informants to name heads of households from landed agriculturists or non-landed agriculturists from each community [(Sirvis (middle caste), and Korkus (Adivasi)]. Of the 40 households suggested, I contacted and interviewed about 11 middle castes and 14 Adivasi. Sirvis had larger, multi-generation households. In the Adivasi households, several younger family members in the Adivasi neighborhood had migrated away for the season.

C3: Method for calculating time spent in any activity

The ITUS has two features that are distinct from the typical design of other time use surveys, and these have to be taken into account while calculating average hours of work. First, it defines three types of days - “normal”, “weekly variant” and “abnormal”- instead of the usual weekday and weekend distinction. Second, the Indian Time Use Survey has a distinct two-stage sampling procedure with the aim of getting as many non-normal days as possible. These are explained in turn to explain why the algorithm used for calculating time spent in any activity used with the ITUS is the time spent on an "average day".

First, the three types of days: A normal day is supposed to constitute a typical, routine day working or studying as the case may be, and a weekly variant is some break in this routine that is not 'abnormal'. For a salaried employee with regular work, a normal day is a day when he/she goes to their place at his/her usual time and does his/her routine work. A weekly variant day would be the days off from the typical routine in a week. In contrast an abnormal day for such a person could consist of activities due to unforeseen circumstances such as taking a family member to the hospital, or due to social and cultural ceremonies that may call for different patterns of time use. The distribution of such days in a given week can vary for different persons.

Thus, the second unique and salient feature of the ITUS - whereas national time use surveys in other countries collect only one “diary day” per person, the ITUS has anywhere between one to three diary days per person. In general, the “diary day” is time use data collected over 24 hours for regular intervals (15 minutes to an hour). Such diary days are typically collected to represent every day of the week. The number of actual

days sampled in the ITUS depends on how respondents answer the question about how many days of each type of day they had in the previous week. Those who reported only one type of day were surveyed once for that type of day, and those who reported two (or three) types of days were surveyed for two (or three) diary days corresponding to the type of days reported. For instance, a person who reports 7 normal days in the previous week only has a normal day surveyed. A person who reports 6 normal and 1 abnormal is surveyed for an abnormal day and a normal day, and so on. However, each person can have only one normal day, one weekly variant or one abnormal day at the most.

This two-stage sampling strategy to collect diary days has several implications for the dataset and the methods used to calculate average hours worked (See Table 10 below). First, as each person has more than one type of day, the total number of days in the sample (61245) is greater than the total number of persons sampled (43257) (last row, third and last column). This is distinct from other time use surveys where there is only one diary day per person, and the sample of persons is also the sample of days. However, second, respondents who were surveyed on more than one day surveyed are approached on distinct types of day without repetition. That is, respondents who were surveyed on more than one day cannot have more than one normal, or weekly variant, or abnormal day. Thus the total number of days surveyed for a given type, say normal is the same of the number of persons who report a normal day i.e. 43189 (Row 1).

Table 10: Numbers and share of each type of day in the total number of days in the previous week and in actual days sampled

Day	No: of days reported in the previous week by all persons ¹		No: of days surveyed		Number of persons corresponding to each type of day
	N	%	N	%	
Normal	283107	93.3	43189	70.5	43189
Weekly variant	18129	6.0	16325	26.7	16325
Abnormal	2188	0.7	1731	2.8	1731
Total	303424	100.0	61245	100.0	43257

Note: No: of days reported in the previous week by all persons = $\sum n f(n)$, where n is the number of days of given type and $f(n)$ is the frequency of persons who report n days in the previous week.

Finally, the share of non-normal days is much greater in the sample than what is reported in the previous week (columns 2 and 4). This was to ensure that there was sufficient representation of non-normal days.

These quirks have to be taken into account while calculating average hours worked and measuring the gender differences in average hours worked. Typically, if diary days were a pure random sample, then the share of different type of days in the sample would reflect this proportion in the population too. In turn, the proportion of different types of days can be used to weight average hours worked at the individual or aggregate levels. However, as non-normal days have been “over-sampled”, it is more appropriate to use the responses to number of days in the previous week as weights to calculate average hours worked by each person. This method involves constructing each person's average day and then getting the sample mean of average days over all persons. That is, a per person metric that takes into account each person having more than one day surveyed and the oversampling of non-normal days.

Thus, hours worked on the average day = $1/7 \sum_i t_{ij} d_{ij}$, where j denote respondents and $j = 1, N$ (total sample size), i is the type of day and $i = \text{normal, weekly variant and}$

abnormal days respectively, t_{ij} the time spent working by the j th respondent on an i th day, d_{ij} the number of i days the j th respondent had in the previous week.

In published papers that use the ITUS, average hours worked is usually measured as the sample average of respondents weekly hours i.e. $1/N \sum_j [\sum_i t_{ij}d_{ij}]$.

Here, I use the average hours worked on an average day = $1/N \sum_j [1/7 \sum_i t_{ij}d_{ij}]$

C4: Age limits

The lower age limit tends to be 15 corresponding to the lower limit of typical childbearing age (15-65). Upper age limits are set as there tend to be more women than men in older age groups, which biases measures of gender differences. While the age cap typically used is 65, in the ITUS, the age limit for the working population should be 15-75 because respondents in the age range 65-75 work non-trivial number of hours and have a high participation rate (82-85%) (see Table 11 below). For my analysis, I used a sample restricted only to married couples, the household and spouse of the household head who are 15 years and older. There are 12 women and 78 men who are aged 76 or older. Analysis excluding the couples to which these women and men belong made no difference to my results. For these reasons I did not impose upper age limits in the restricted sample that I used.

Table 11. Gender difference in average hours worked and sex-ratio of sample by age groups

Panel A: Including zero values							
Age range	Average Hours worked		Gender difference in average hours worked				
	Men	Women					
6-10	0.68	1.08	0.40				
10-15	1.77	3.15	1.38				
15-50	8.08	9.84	1.76				
50-65	7.89	8.16	0.27				
65-75	5.46	5.23	-0.23				
75 +	2.32	2.37	0.05				
All	6.61	8.11	1.5				
Panel B: Excluding zero values							
Age range	Average hours worked		% Working of all surveyed		Gender difference in average hours worked	Ratio of all women to all men surveyed	Total population surveyed
	Men	Women	Men	Women			
6-10	1.99	2.11	34.1	51.0	0.12	0.81	3155
10-15	3.15	3.96	56.3	79.3	0.81	0.88	4899
15-50	8.46	9.92	95.3	98.9	1.46	0.98	27639
50-65	8.21	8.37	95.8	97.2	0.16	0.91	5536
65-75	6.57	6.12	82.9	85.0	-0.45	0.84	1563
75 +	4.32	4.47	53.7	52.8	0.15	0.89	463
All	7.72	8.73	85.1	92.3	1.01	0.94	43257
Note: Gender differences reported = female average hours – male average hours, average hours is average of hours worked on average day							

C5: Supervisory Care

Mothers of young children especially those aged 5 and below are bound to be responsible for their children for most, if not all of the time, and supervisory care should be high for such mothers. Apart from the dependency specific to young children, there are two reasons why supervisory care should be much larger in rural India.

Table 12: Levels and distribution of main components of care work and total care work hours for wives of household heads with and without children aged 0 to 5 years

	Mean (SD)	Min	25 th Percentile	Median	75 th Percentile	Max
<i>I. Wives with at least one child aged 0-5 years (N=4359)</i>						
Total care work	7.8 (2.8)	0	5.8	8	9.9	20.8
Indirect care work	6.4 (2.4)	0	4.8	6.4	8	18.9
Direct care work	1.4 (1.3)	0	0.2	1.1	2.1	10.2
Child care	1.3 (1.3)	0	0.1	1.1	2	9.5
Supervisory care	0.2 (0.5)	0	0	0	0	5.7
Other direct care	0.1 (0.3)	0	0	0	0	9
<i>II. Wives without any children aged 0-5 years (N=5930)</i>						
Total care work	6.1 (2.8)	0	4	6	8.2	18
Indirect care work	5.7 (2.8)	0	3.8	5.6	7.8	18
Direct care work	0.4 (0.9)	0	0	0	0.1	10
Child care	0.3 (0.9)	0	0	0	0	10
Supervisory care	0.1 (0.5)	0	0	0	0	10
Other direct care	0.1 (0.3)	0	0	0	0	7.5
Notes: Total care work is the sum of indirect care and direct care. Direct care is composed of childcare and other direct care, and supervisory care is a subset of childcare. Time spent on specific categories is hours spent on an average day of the week						

One, rural India is characterized by poor access to public or private childcare services. Two, more than 80 percent of rural Indian women who engage in income-earning work do so in the agricultural sector. Such women work either on their family

farms or as wage laborers; occupations where women are likely to have young children accompany them unless there are substitute caregivers in the immediate and/or extended family. Indeed, one could argue that hours of indirect care are likely to be the lower bound for true values of supervisory care and childcare. However, Table 12 shows that the levels and distribution of total care work for wives of household heads disaggregated by whether they have young children or not shows that even mothers of children aged 0-5 have implausibly low levels of supervisory care. For mothers with children aged 0-5, childcare has a minimum of zero and the 1st percentile is 1 hour. However supervisory care has largely zero values and only the 99th percentile is 1 hour. As childcare is composed of both hands-on childcare and supervisory care, the low figures for supervisory care indicate that childcare figures are underestimated for most women in the ITUS. Nevertheless, the ITUS does capture important aspects of hands-on child care, and indirect care both of which are higher for wives with children aged 0 to 5 years than wives without such children in every part of the distribution (see second row of Panel I and II, and third row of panel I and II, Table 12).

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